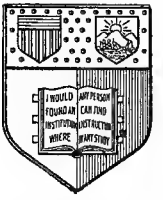

AGRICULTURAL EDUCATION.

PRICE THREEPENCE.

1904.

REPORT OF THE CONFERENCE

ON

AGRICULTURAL EDUCATION

HELD AT

GLOUCESTER

ON OCTOBER 15TH, 1904.

EDITED BY

CHARLES BATHURST, Junior, M.A.,

AND

JOHN C. MEDD, M.A.

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INTRODUCTION.

The Conference at Gloucester was arranged to enable some of those specially entitled to be heard upon the various phases of Agricultural Education to appear upon the same platform, that their views might be published simultaneously for consideration by Local Authorities.

The object was to secure definite expressions of opinion from both Agriculturists and Educationists alike, and it may be noted that of those who took part in the proceedings many, if not most, are identified with Agricultural interests, while the remainder may be said to represent the Educational aspect.

In presenting this Report, we beg to offer our grateful thanks to Lord Onslow and the other speakers who so readily responded to the invitation to address the Conference, to Sir John Dorington for presiding, and to Mr. H. W. Household and the staff of the Gloucestershire Education Committee for the assistance which they willingly rendered.

CHARLES BATHURST, JUNIOR.
JOHN C. MEDD.

NOVEMBER, 1904.

THE CONFERENCE.

The Conference, which was convened by Mr. Charles Bathurst, junior, and Mr. J. C. Medd, was held in the Shire Hall, Gloucester, on Saturday, October 15th, 1904. The Right Hon. Sir John E. Dorington, Bart., M.P., Chairman of the Gloucestershire County Council, presided, and the following, amongst others, were present :—

The Lord Lieutenant (the Earl of Ducie, F.R.S.), the County High Sheriff (Mr. B. St. John Ackers), the Earl of Onslow, G.C.M.G. (President of the Board of Agriculture and Fisheries), Viscount Lifford, Lord Monteagle, K.P. (President of the Irish Agricultural Organization Society), Lord Estcourt, the Hon. A. B. Bathurst, M.P., the Hon. J. M. Rolls, the Right Hon. Sir Charles W. Dilke, Bart., M.P., the Right Hon. Henry Hobhouse, M.P. (Chairman Somerset Education Committee), Sir T. Crawley Bœvey, Bart., Sir Lionel Darell, Bart., Sir William Guise, Bart., Sir Henry Mather Jackson, Bart. (President of the Monmouthshire Chamber of Agriculture), Sir James Rankin, Bart., M.P. (Chairman Herefordshire Education Committee), Sir William Wedderburn, Bart., Mr. R. L. Morant, C.B. (Permanent Secretary to the Board of Education); the Dean of Gloucester; Mr. J. T. Agg-Gardner, M.P., Mr. C. P. Allen, M.P., Mr. C. E. Colston, M.P., Mr. G. Lambert, M.P., Mr. R. B. Martin, M.P., Colonel Curtis-Hayward, Colonel Alan Gardner, Colonel King-Harman, Colonel Chester Master, Colonel H. Skrine, Lieut.-Col. Capel, Lieut.-Col. Paget, Major J. H. Selwyn-Payne, Major Ricardo ; Captain E. C. Bennett ; the Rev. Canon Coventry, the Rev. Canon Steward, the Rev. J. B. McClellan (Principal of the Royal Agricultural College, Cirencester), the Revs. E. H. Ball, J. C. Besant, A. W. Cornwall, J. A. Owen, R. M. Williams; Mr. Erskine Pollock, K.C., Mr. H. Terrell, K.C. ; Professors E. Blundell, E. Kinch, T. H. Middleton, J. Penberthy, Robert Wallace, J. Wertheimer ; Lady Mather-Jackson, the Hon. Mrs. Charles Bathurst, Miss Ball, Miss Bradley (Principal of the Lady Warwick Horticultural College), Miss May Crooke, Mrs. Alan Gardner, Miss Gardner, Mrs. Household, Mrs. J. C. Medd, Miss Park (County Dairy School), Mrs. Arthur Playne, Miss Verena Shuttleworth, Mrs. F. W. Waller; Messrs. W. Avery Adams, D. T. Alexander, Thomas Allen, W. Allen, R. Anderson, A. Apperley,

E. Armitage, J. Ashwin, St. Clair Baddeley, James Baker, Charles Bathurst, junior, E. E. Bennett, James Bennett, J. D. Birchall, Arthur Brown, R. H. Bromley, J. H. Bruton, E. W. Caddick, F. Cadle, J. W. Cadle, A. R. Cohen, M. W. Colchester-Wemyss (Chairman Gloucestershire Education Committee), W. Constance, A. J. Cooke, C. W. Radcliffe Cooke, D. T. Cowan (Director of Education, Hants), J. H. Crewdson, F. W. B. Cripps (Vice-Chairman Cirencester Chamber of Agriculture), T. B. Croome, E. Cullimore, E. J. Dance, M. W. David, F. Davis, R. Prescott Decie, J. W. Dee, H. Denne, H. Dent-Brocklehurst (President of the Gloucestershire Chamber of Agriculture), G. Dimmer, Edric Druce (Principal of the Ridgmont School, Beds), M. J. R. Dunstan (Principal of the S.E. Agricultural College, Wye), G. F. Dutton, Thomas Dyke, A. E. Dykins, C. H. B. Elliott, H.M.I., J. Pearce Ellis, H. J. Elwes, F.R.S., G. Embrey, J. A. Emery, A. B. Evans, J. H. Fewings, J. T. Francombe, E. T. Gardom, A. W. George, A. B. Ghewy, J. Thornton-Gibson, H. Goldingham, F. E. Goodchild, W. J. Grant, W. Greenwood, Waldron Griffiths, Thomas Hacking (Principal of the Lady Warwick School, Bigods), E. R. Haine, A. D. Hall (Director of the Rothamsted Experimental Station), E. Handy, E. Harden, Miles Hart, W. Haskins, F. Hawkins, J. G. Hawkins, W. H. T. Hearle, M. H. Hicks-Beach, W. F. Hicks-Beach, R. T. Hinckes, James T. Hobbs, G. H. Hollingworth, W. H. B. Hope, H. W. Household (Secretary to the Gloucestershire Education Committee), H. A. Howman, T. H. Hulls, B. Hutchinson, F. A. Hyett (Chairman of Quarter Sessions for Gloucestershire and Vice-Chairman Gloucestershire Education Committee), W. Iggulden, P. H. B. Ingles (H.M. Junior Inspector), F. H. T. Jervoise, J. H. Jones, W. Jones, W. C. Nigel Jones, R. J. Kerr, junior, J. C. C. Kimmins, W. H. King, J. R. Lane, W. S. Lane, J. Lauder, C. W. Lawrence, E. P. Leacock, A. G. Legard, H.M.I., W. Legge, E. Egerton Leigh, R. A. Lister, R. G. Luckly, H. Macan, (Director of Education, Surrey), Colin Machen, G. Mannell, H. J. Marshall, W. H. Marshall, H. S. Matthews, H. Matthews, J. C. Medd, G. Morgan, J. Morris, W. Mutton, J. Newcomen, Arthur Owen, C. Palmer, C. T. Palmer, W. R. Peacey, J. M. Peate, John Percival (Director of the Agricultural Department, University College, Reading), J. Peter, G. Peters, Arthur T. Playne, T. Preece, A. T. Price, J. E. Priestley, W. Priday, J. W. Prohyn, G. Prout, B. Read, E. R. Richings, J. H. Sainsbury, F. B. de Sausmarez, H.M.I., J. M. Scott, H. Sessions, D. Shipp, J. Smith (Chairman Herefordshire Agricultural Committee), A. F. Somerville, R. Steel, T. A. Stephens, J. Stevens, W. T. Stevens, J. Style, P. Stubs, J. Surman, Martin J. Sutton, Bruce Swanwick, W. Taylor, R. Beaumont Thomas, C. E. Thornycroft (Chairman Cheshire Education Committee), R. I. Tidswell, A. K. Toms, E. N. Tuck, Drysdale Turner, Christopher Turnor, A. E. H. Tutton, F.R.S., H.M.I., F. R. Vaughan, Frederick Verney,

S. Walker, C. Wallich, M. J. Barrington Ward, R. P. Ward (Director of Education, Cheshire), G. Wargent, R. C. Warner, T. A. Washbourne, C. G. Watkins (Secretary to the Bucks Education Committee), W. Webber, E. V. V. Wheeler (Chairman Worcestershire Agricultural Snb-Committee), J. M. White, G. Whitfield, T. E. Williams, John Wiltshire (Secretary to the Herefordshire Education Committee), C. D. Wise, A. E. Withy (Chairman Wilts Education Committee), J. H. Wootton, T. J. Young (Principal of the Agricultnral School, Holmes Chapel).

Sir Thomas Dyke Acland, Bart. (Chairman of the Devon Education Committee), and Sir Thomas Elliott, K.C.B. (Secretary to the Board of Agriculture), were prevented by illness from attending.

The RIGHT HON. SIR JOHN E. DORINGTON, BART., M.P.: I do not intend to say many words in opening this most important Conference. I very much regret that two of our most distinguished and invited guests and friends, Sir William Hart-Dyke and Sir John Cockburn, are prevented —the former by the dangerous illness of his son, and the latter in consequence of important political engagements— from attending. What Sir William Hart-Dyke intended to have said has been sent in the form of a paper which will be read. We are favoured by the attendance of a great number of gentlemen of distinction, and, amongst others, I am very glad to find that the neighbouring counties of Herefordshire, Monmouthshire, Somersetshire, Oxfordshire, Warwickshire, Wiltshire and Worcestershire, and the City of Bristol have sent delegates to attend this Conference. So this is not a purely Gloucestershire meeting: it is a meeting of all the surrounding districts and of those who are interested in this common subject. The subject which we are met to discuss will, therefore, be debated to-day not from a Gloucestershire point of view, but from a general point of view. It is one of immense interest, and on which it is very difficult indeed—I say so myself—to form definite opinions.

We all desire the same object—namely, if possible to improve the agriculture of this country so that it shall become more profitable and more beneficial to all classes. No doubt competent education is absolutely necessary for successful agriculture; but how that is to be done is certainly a very moot point, on which I hope to-day we may receive some very definite opinions from the very able men who have come here to address us, from which possibly some general conclusions may be derived. I will myself say no more at present, but I will now call upon Lord Onslow to address us.

The Right Hon. the EARL OF ONSLOW, G.C.M.G. (President of the Board of Agriculture and Fisheries), said: Sir John Dorington, my lords, ladies and gentlemen. I think it was a very happy inspiration which prompted those who promoted this Conference to do so at the present juncture in educational affairs. Two very important changes have recently come about. I think it is time that the agricultural community should take stock of the educational position and see how they stand with reference to the great industry which they pursue, and the large contribution which they are now, for the first time, called upon to make towards the education of the children of the country. The second reason why I think the moment is propitious is because there is in existence a reorganised Department having charge of the elementary education of the country, which is proceeding upon lines somewhat different from any hitherto adopted by the Government in regard to education. And I should like to say, as one of those whose Department contributes to the agricultural education of the country, that I come here by no means as a teacher, but rather as a learner. I want to know, and the Government want to know,

in what direction they can assist agricultural education; and I am quite sure that, so far as they can do it with justice to the other classes of the community, they are only too anxious to assist you. May I say that I congratulate the Conference on the presence here this morning of my friend and, if I may be permitted to say so, my colleague, Mr. Morant, the permanent head of the Education Department? It has sometimes been suggested that the educational work of the Board of Agriculture should be transferred to the Board of Education. (A voice: "Hear, hear.") I am sorry that I cannot join in that "Hear, hear," and the reason I will give in a very few words. It is that the Department over which I preside has special charge of the agricultural interests of this country. Now, the agricultural population of England is very much less in proportion to the artisan population than is the case in other countries—in France, Germany, the United States of America, or even in Ireland; and, therefore, I think it is a great advantage that where one Department is charged with the general education of the country, there should be another Department keeping constantly under review the policy of the Board of Education in regard to agricultural teaching. But I should like to say at the outset that there is the most complete co-operation between the Board of Agriculture and the Board of Education. My noble friend, Lord Londonderry, and I have consulted together upon many occasions as to the manner in which we could best promote agricultural education, and, though it may not be for long, still, so long as he and I have the honour to represent those two Departments, I think you may rest assured that we are certain to work hand in hand together. Now, there was established some years ago a most useful body called the Agricultural

Education Committee, the objects of which were to secure systematic and efficient instruction, both theoretical and practical, in agricultural subjects, and to diffuse among the agricultural classes a more thorough appreciation of the advantages of instruction bearing, directly or indirectly, on their industry. I hold in my hand the resolutions which were adopted by that Committee, of which Sir William Hart-Dyke and Mr. Henry Hobhouse were active workers; and I should like to refer to one or two of them in order to show how far the Government have already been able to meet the wishes of those who have the education of the agriculturists at heart. They suggested, "that with rural "elementary schools there should be a continuous course of "rural instruction, commencing in the lower standards with "object-lessons, such as those recommended at present, and "continued throughout the upper standards with lessons in "natural history and elementary science bearing on agri-"culture and rural life"; "that grants adequate to "remunerate the teachers must be given for these rural "courses, a 'block' grant being preferable"; "that "provision should at once be made at certain of the teachers' "training colleges for giving those students who desire it "practical as well as theoretical instruction in subjects "bearing on agriculture and horticulture"; "that girls "in rural elementary schools should be given a course of "instruction corresponding to the rural course recommended "for boys, but with the substitution of simple lessons in "cookery, domestic economy and hygiene for practical work "in the workshop or on the land"; and "that the Board "should encourage those county authorities who have not "yet done so to provide, or to contribute to, school and 'experimental farms, and should inspect and report annually

"on such farms." It will, I think, be in the knowledge of nearly all those who take an interest in agricultural education that these very praiseworthy objects which the Committee set before them have to a large extent been accomplished; indeed, I have heard it said by members of that Committee that they considered their work has almost come to an end. Perhaps, if I may venture to trespass on your attention for a few moments, I may sketch out how the change has come about, and then proceed to inquire in what way we can still further carry out the wishes of those who are interested in this subject. As long ago as 1876 the Education Department gave grants for teaching the principles of agriculture. That, I think, was the commencement, but it did not proceed entirely upon right lines, for in those days the grants were made solely as the result of a written examination held in May of each year. The syllabus was absurdly easy; it could be "got up" by any teacher who wished to increase his grant thereby. The climax was reached when flourishing classes were held and large grants earned in the principles of agriculture in such places as the City Road, London. After about twenty years the absurdity of the situation was realised; the subject was dropped, and a change was made in the syllabus. The next stage in agricultural education was the Committee, presided over by Sir Richard Paget, whose name is well-known throughout the West country; and the result was the grants which are administered by my Department, and as to which I shall have a word or two to say presently. Concurrently with this were started evening classes in the principles of agriculture; and there was also a great development in the number and efficiency of the classes dealing with chemistry and other sciences upon which agricultural practice largely depends. This shows how

there are indirect ways in which a sound, general education may tend to improve the standard of technical knowledge in such an industry as agriculture. But what really gave the greatest stimulus of all to agricultural education was the passing of the Local Taxation (Customs and Excise) Act, and the handing over of what is vulgarly known as "the whisky money" to the local authorities of England. It was, I think, somewhat unfortunate that the local authorities had not time to prepare themselves for this sudden accretion to their funds. You will recollect that it was the intention of the Government of the day to apply the money to the purchase of licences of public-houses, but during the passage of the Bill through the House of Commons it was altered, and a very large sum of money—which amounts, I think, now to something like £90,000 a year—has been devoted from that fund to the agricultural education of the country. Well, it remained then for the Education Act of 1902 to provide the machinery by which the numerous and necessarily various methods of aiding agricultural education could be completely correlated.

Now we have in every county a Local Education Authority, including members familiar with the special needs of each district and in a position to watch closely the effect of efforts to meet them. In their educational arrangements they have only to meet the requirements of the Board. The organisation of local schools and classes and special central institutions has become the joint concern of the Central and Local Authorities, who are able to co-operate in bringing educational facilities to bear upon agriculture and horticulture. The efficiency of the work and the possibilities of its usefulness increase as years add experience, and

as the responsibility of local management brings to it the interest of an increasing number of men well qualified to administer the funds entrusted to them. But the latest development of all is in the Code of Regulations issued by the Board of Education for the year 1904. I hope that every person interested in agriculture will carefully study the preface to the Code of 1904; I think it completely carries out what it professes to be—namely, a document which may be read and understood by the people. It clearly lays down the course of instruction which is to be given in the elementary schools, including the "knowledge "of the common phenomena of the external world, with "special reference to the formation of a habit of intelligence "and accurate observation and to the application of that "habit, in conjunction with simple forms of experiments in "the daily life and surroundings of the scholars."

In addition to the regular curriculum, special grants are given for boys for handicraft and gardening, and for girls for cookery, laundry work, dairy work and household management. I think that that policy is not only a wise one, but is the outcome of what is clearly the desire of those who administer elementary education in rural districts, for I observe that instruction in gardening has increased very considerably, and particularly in the past year. It would be difficult, I think, to exaggerate the value of this instruction, and I hope that County Councils will do all in their power to promote it. It tends to produce amongst boys habits of neatness, order, method and observation. It makes them take a keen interest in their work, and, I think, to some extent it makes them loth to leave a place where they can practise that which is not only of interest but of

considerable profit to them. It has come to the knowledge of the Board of Agriculture that in some districts farmers do what they can to prevent instruction of this kind being given. To my mind, no course of action could be more short-sighted than that, for it tends to drive away from the village home those who have sufficient eagerness and energy to turn their spare time, or time which might be spent in sleep, to profitable account, and it leaves behind only those who are too indolent or too lacking in spirit to do any more work than they are obliged to do. Well, in addition to that, there is a system—a part of the scholastic ladder—to which, I think, perhaps not quite sufficient attention has been drawn. I mean the establishment of local science and art scholarships (including, of course, agriculture) where a locality is willing to provide a part of the funds. If in any locality the sum of £5 a year is forthcoming towards founding such a scholarship at a place of secondary education, the Board of Education adds £4 in the first year, £7 in the second year, and £10 in the third year. I think it will be obvious that such a State contribution is a very considerable incentive to children after they leave the elementary school and are pursuing their studies under the circumstances which I have mentioned. But I find that there are only something like 1,660 such scholarships in the whole of England in 1904. If we are to promote what I think all of us desire, there should be an educational ladder from the elementary school up to the University; greater use must be made of the facilities which the Government afford for founding these scholarships in the various localities. I should next like to refer to the work which my Department is doing in promoting the higher agricultural education. We, of course, work very much on the same principle as the

Board of Education does in regard to the scholarships I have just referred to—namely, we endeavour to draw from the purse of the local authority contributions towards the funds, and we make our grants only in those cases where encouragement is given by the locality itself. There are several classes: there are universities, there are colleges, there are practical schools, and there are institutes for teaching particular subjects, such as the manufacture of cider. I shall be glad if you will be so good as to look at the map which hangs behind me, which I have had prepared in order to show what work is being done by the Board of Agriculture and how far co-operation has been obtained from the various local authorities. The red spots which you see marked with Roman numerals are the collegiate university centres, and I have had the counties coloured so as to show where there is a block of counties, which are all able, if they choose to do so, to make use of the collegiate centre in their midst. I will begin with No. 3, which is perhaps the most important of all, because it has every class of institute, the Eastern Counties of England, Cambridge, Isle of Ely, Huntingdon, Northampton, Norfolk, Suffolk (East and West), Bedford, Hertford and Essex. There are three classes of institutions in this division. First of all there is an experimental farm at Ridgmont, for instruction of a practical character with a little scientific teaching, where five courses are given of five weeks each. Then, at Chelmsford, there is a laboratory where a student can go through a complete course of scientific training; while in the agricultural department at the University of Cambridge the highest scientific training may be obtained with the provision of lectures throughout the whole district, and the organisation of field experiments. That, I think, is a model grouping of counties. I will not

weary you by enumerating the other districts which you see on the map. I may, however, just point out that the Northern counties—Northumberland, Durham, Cumberland and Westmorland—have a centre in the College of Science at Newcastle; the three Ridings of Yorkshire have the University of Leeds; Wales is exceptionally well situated with the University Colleges at Aberystwith and Bangor; Surrey and Kent have the South-Eastern Agricultural College at Wye (University of London); and counties coloured dark blue—Berkshire, Oxfordshire, Buckinghamshire, Hampshire, and Dorsetshire—have the University College at Reading. I am sorry to say that all those counties which appear white on the map have either small institutions for one county only or none at all; and you will observe that amongst those marked white is Gloucestershire. I do not, of course, say that good work is not being done in some of those counties; on the contrary, excellent work is being done by means of itinerant lecturers in Monmouthshire, although there there is no collegiate institution. But I venture to hope that the great advantages which the other counties have derived from the collegiate centres which they possess will lead the local authorities in those parts of England, which have not yet established any such institution, to inquire into the advantages which the counties to which I refer have received, and be induced to follow their example. The Board gives from £800 to £1,000 as a contribution to each of those centres, and I am sure there are many here who would be able to speak far better than I can of the value they have proved to be to the agricultural education of those communities. I think, therefore, we may say we have, at any rate, the ground-work of an agricultural educational ladder, and it only now needs the cordial

co-operation of the local authorities with the Board of Education and with the Board of Agriculture to show how we can further develop that correlation and provide an educational ladder in all parts of England from the elementary school to the university. There is, perhaps, one omission which we should like to see rectified, and that is with regard to the difficulty of obtaining practical training for the agricultural labourer. Now, it is not the business of the labourer to know all about soils, manures, and so forth ; that is the business of the farmer. But it is the business of the labourer, —at any rate, it is to the advantage of the labourer—that he should understand the use of all the tools which are employed in husbandry. The labourer, after all, is the private soldier in the great army of the field, and he requires to be trained just as much as anybody else does. I hope that that lacuna in our system may before very long be filled up. I will throw out a suggestion as to the class of school I mean. There exists such a thing at the present time, but it is not for the children of the honest and respectable. It is rather for those of the criminal class. I mean the Reformatory School. Now, the education which is given in the Reformatory Schools is an excellent and most practical one, and I sincerely hope that the educational authorities of the country will some day see that it is just as desirable that the children of the respectable and hard-working man should receive as good an education as those who are sent to school instead of to prison. And let me point out to those who contemplate going in for the higher forms of agricultural education that every day the prizes in the profession are becoming more numerous and more difficult to fill. There are appointments in India, Bombay, Bengal and the Punjaub ; in East and West Africa, South Nigeria, British

Guiana, Egypt, the Transvaal and in Cape Colony—all those are well-salaried appointments, and may be looked upon, I think, as the prizes which attach to the higher forms of agricultural education. But what we have in the first instance to consider—probably the most important thing we have to take in hand—is how to increase the number of children who are trained in rural matters, by training their hands and their eyes; and there, of course, we are met with the difficulty of providing a sufficient number of teachers. I do not think you can expect that those who go to the training colleges and are looking forward to becoming teachers in the highly salaried positions in our large towns, will devote themselves with the same energy and industry to the study of agriculture and rural subjects as would be the case if they had made up their minds that their future lay in the rural parts. But when a teacher has come out of the training college and has accepted an appointment in a rural school, I think there ought to be every facility given to him to learn rural economy and to be in a position to impart it to the children. There should be facilities at all of those places, those colleges which I have described, for holiday courses for the teachers in their immediate neighbourhood. There might be also, I think, Saturday courses by means of which an itinerant instructor could teach the teachers of the elementary schools how to impart rural knowledge to the children.

At the Midland Agricultural and Dairy Institute in Nottinghamshire they have established such courses with very good results. They had 27 teachers who availed themselves of that kind of instruction in 1902; they had 43 in 1903; and this year they have 61. Then, again, it would be an

advantage if every elementary school had a school garden; and in these days, when every village almost has its allotments, there is an excellent opportunity for the local authority to take one of these allotments and have it cultivated under the county instructor, as a model allotment for all the other allotment holders; and that model allotment might easily be used as a practical training ground for the teacher in the elementary school. I have carried it out myself on my own property in Surrey with very excellent results. The County Council provide the seeds; the holder of the allotment provides the labour and gets the produce, but is bound to cultivate the allotment under the direction of the county instructor; and the county instructor on Saturday afternoons gives instruction to the school mistress in the elementary school. I hope before the Conference closes we shall hear from some of those who are engaged in agriculture and who entertain the feeling—I do not say that I share, but which I know is widely held in the agricultural districts—namely, that children are kept too long at school, and that their labour is not available to assist in maintaining the common household. I suppose most of you here know (though, perhaps, the knowledge does not extend to the parents of the children) Robson's Act? I am afraid that that Act has not been taken advantage of to such an extent as it might easily be. You are aware that that Act raised the minimum age for total or partial exemption from eleven years to twelve, but made a special exemption in the case of children to be employed in agriculture. These are permitted partial exemption at eleven years of age, so that they may be enabled to go to work a year earlier than the others; but in return they forfeit the right to claim total exemption until they have reached the

age of thirteen Now, my friend, Mr. Medd, who I have no doubt will address us by and bye, has constantly urged that children should be allowed to leave the elementary school (the day school) at an early age, and I think he went so far as to say that there should be no requirement as to attendance at a day school. Two hundred and fifty attendances are, as we know, required under the present law, but he would, in return for granting exemption from attendance at the day school, bring the parent under a binding contract to send the child to an evening continuation school till a much later age—thirteen, fourteen, or, I think, even fifteen. Well, I confess that that seems to me to be well worthy of attentive consideration, because I think it must be in the experience of all who are engaged in the practical work of teaching that the mind of a child of twelve or thirteen years of age is really not sufficiently receptive to carry away a sound education ; but if that child will return to school after he has done his day's work I do not believe that he will be so tired that he will not be able to pay attention to the work of the evening school. If you can keep him there till he is fifteen or sixteen, you may then be able to give him a really sound and satisfactory education. There is one other suggestion which I should like to throw out for the consideration of those who are engaged in the practical part of this work, and that is, when we are teaching the children reading, writing and arithmetic, let us try in rural schools, as far as possible, to combine them with a knowledge of rural things. No doubt it is extremely interesting to read about elephants and alligators, and about Japanese and Russians ; but since he must learn to read from some text-book, why should it not be a text-book which describes the surroundings of his everyday life ? Why should he not read about ploughs and

threshing machines just as much as about alligators and hippopotami? And when you have to teach a child the ordinary elements of arithmetic, why not select as a subject the budgets of working class families in town and in country? They must be, of course, on an accurate basis on the actual prices ruling. I think it would be a very good thing indeed if children in rural schools were to be taught, for example, what is the difference between an income of 25s. a week, with house rent at half a guinea, and 16s. a week wages, with house rent at eighteen pence. I think if we gave a little instruction of that description, and the eyes and minds of the children were trained to country subjects and their attention was drawn to the health-giving surroundings of country life, it might do a great deal to stem that which I venture to think is the disastrous migration from country to town. I do not wish to detain you when there are other speakers who will deal with this matter from a more practical point of view than I can pretend to do. I have come here, as I said, to learn rather than to teach; and all I wish to convey to this very representative gathering is the earnest desire of His Majesty's Government to promote, so far as they possibly can, rural teaching in rural districts, and to give you the assurance that in the carrying out of that policy there is absolutely no difference of opinion between the Board of Agriculture and the Board of Education. It is with great pleasure that I have had the opportunity of coming amongst you, and I shall hope in the course of the day to learn much as to what we can do to meet your wishes.

HIGHER AGRICULTURAL EDUCATION.

By Sir William Hart-Dyke, Bart., M.P.

(*Chairman of the Agricultural Education Committee.*)

In the absence of Sir William Hart-Dyke, Bart., M.P., the following paper, which he had contributed, was read by Mr. J. C. Medd :—

We are inaugurating a Conference on Agricultural Education : that is the all-important question upon which we are met here to confer, and it appears to me essential that, in the first place, we should have some definite aim in front of us ; secondly, that we should take stock of the position in which we stand as regards the education of our rural population and those connected with our great farming industry ; and, thirdly, that we should endeavour to define how the object we have in view can best be insured as regards the Central Authority which should guide our destinies, and the local authorities upon whom will devolve the carrying out of a scheme which shall supply not this county or that, but embrace the country as a whole.

First, as to the aim in view. It is not far to seek. "To "place within the reach of all classes engaged in agriculture "facilities for a thorough education in every branch con- "nected with the industry, commencing with Nature Study "in our Elementary Schools to the highest training at "collegiate centres." We wish to secure this result, being fully aware of the difficulties and struggles with which the

farmer has to do battle at this day: low prices of cereals owing to foreign competition; a climate which at times defies the skill and energy of the most enterprising in the calling; and a lack of sympathy on the part of a huge and increasing population, which is suffering daily from the increasing exodus of labour from the country to the town, and which, so long as prices are low, never balance up the account between the cheapness of their food and the loss accruing to them from the increasing competition of labour in our industrial centres.

We boast of agriculture as the first industry in the land, and yet it appears that it is the very last to receive recognition from the State or Parliament, or those demanding educational reforms which affect every other enterprise and industry in our midst. For many years past the few head centres of agricultural training which occur to us can be counted upon our fingers, and the work they have done proves only a strong incentive to further efforts, until each county or district of combined counties secures the universal application of the system throughout England and Wales. We are, indeed, a strange people when we consider the millions which have been spent upon technical schools and institutes during the past fifteen years, affording a real, practical training for our artisans as regards the application of art and science to the industries in which they are engaged; whilst the sums spent and the efforts made on behalf of this greatest industry of agriculture have been infinitesimal in comparison, and unworthy of a sensible and practical nation. Gentlemen, we are met here to-day to assist in turning over a new page in our educational system, and the Act of 1902 has given a freedom to local authorities in dealing with the question

which places a lasting responsibility upon them. I was glad to read the other day that one of the bitterest opponents of the late Act, the Bishop of Hereford, acknowledged that it had already been the means of stirring up an immense amount of interest and enthusiasm for Education. Those of us who have taken part in the management of collegiate centres connected with agriculture can bear the fullest testimony to the sympathy and support which local agriculturists give to them, and how gladly they avail themselves of information and research in all matters pertaining to their calling. We may not have the great body of agriculturists with us to-day, but before long they will begin to appreciate our efforts, and recognise the stern necessity for the application of science to their calling. In any case, it is our duty to spare no effort to stir up all authorities, whether central or local, so that they may recognise the importance of immediate and earnest effort; and, although we do not pretend that the sole and only cure for all agricultural difficulties lies in more thorough training and education, we can bring testimony to bear which is overwhelming as to the great and lasting benefit and advantages which can be gained from them.

As to the position in which we stand, it affords a glorious example of much that appertains to our educational struggles. This is the first time that local authorities have been clothed with powers practically unlimited for dealing with education in all its branches. We have as Central Authorities the Board of Education and the Board of Agriculture and Fisheries, the latter body having for many years, with funds most limited, done much to encourage and develop centres of agricultural education. Local Authorities, however, find themselves

grievously handicapped and impeded at starting, and their efforts nipped in the bud in many counties by the fact that the charge for the training of pupil teachers (essentially a charge for elementary education) is thrown upon those who conduct higher and agricultural education. The result has been lamentable, and in a number of counties has, on account of the heavy expenditure involved, prevented even the raising of a penny rate for Secondary and Technical Education. I say advisedly that until this evil is remedied and the question of the Training of Teachers taken up as a whole by the Board of Education, something like a deadlock will occur as regards the development of higher education in many counties. Parliament went far last session to recognise that this matter of teacher training is one of national concern, and should be borne in the greater part by the national Exchequer. How can we popularise any system of Agricultural Education worthy the name when these heavy charges for Pupil Teacher training are borne by the locality? and in the case of elementary teachers in many counties there is no guarantee against producing first-class teachers for the benefit of a neighbouring community.

We taxpayers bear ungrudgingly the burden of a Navy and Army as an insurance for the safety of the Empire at home and abroad; and yet surely one odd million spent on insuring a good supply of teachers, trained on right lines and on a national system, would be of enormous advantage to our cause, and do more to stimulate and encourage educational work in all its grades than any other increase of grant for local work?

Then how do we stand in regard to our Central Authority?

We have here the representative of the Board of Agriculture, and we are reminded of the different phases through which, by a curious process, the respective Authorities of Agriculture and Education have passed. I can remember the day when the Vice-President of the Council held sway over the diseases peculiar to animals, such as swine fever, and now, according to the weird and uncertain methods of our various departments, we find the Board of Agriculture paying back the balance of debt owing to Education in the person of the noble lord who evinces so keen an interest in securing a practical training for our farming community. This kind of see-saw on the principle of give-and-take may be all very well; but now that we are making a fresh start with brand-new Local Authorities, with the fullest powers allotted to them, common sense and practical considerations alike demand that if the Board of Agriculture are to fulfil their destiny as an educational body, larger powers and more liberal funds must be placed at their disposal if they are to fulfil their mission and attempt to cover any extensive area with success. It does appear to me that a dual system divided between the Board of Education as the real Central Authority responsible to Parliament on the one hand, and the Board of Agriculture, struggling with a small pittance to promote and assist our object, on the other, is not likely to secure an economical system. As schemes develop in the several counties through the medium of continuation schools and secondary schools linked to various collegiate centres, the whole onus of inspection will rest with the South Kensington branch, while the funds will be supplied in many cases by another and distinct Department. I mention these points because they all appear to me to point to something like a revision of the present state of things.

I have dealt in general terms with some points which occur to me in discussing this important question.

I am convinced, after some experience of the working of the Act of 1902, that if agricultural training of the higher grade is to become universal and successful, one of our first demands should be the removal of the heavy incubus upon higher and agricultural education in counties, caused by the heavy charge for the pupil teacher training connected with elementary schools; secondly, that the whole question of teacher training being surrounded by such serious obstacles, involving such a serious charge on local funds, it should be treated as a matter of national concern, and that a Central Authority should have full power for dealing with such training upon a uniform system out of funds provided by the national Exchequer; thirdly, that a multiplicity of Central Authorities dealing with higher education is neither conducive to economy nor success in administration.

LOCAL EXPERIMENTAL AND DEMONSTRATION PLOTS

Their Uses, Limitations and Organization.

BY

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I have been asked to read a paper on experimental and demonstration plots, their uses, limitations, and organisation. In view of the nature of this gathering, I have thought it desirable to treat especially of experiments of the kind usually conducted under the auspices of county councils rather than of those made at experimental stations. In contradistinction to the experiment of the central institution, I have called the experiments of which I am to speak local experimental plots.

Historical Note.—

The local plot has been a popular means of agricultural investigation in Britain. The great variety of soils, the changeable character of the climate, and the intelligence of its farmers brought the plot into favour at a very early period of the agricultural awakening. In 1743, for example, Robert Maxwell, of Arkland, in pleading for the establishment of a professorship of agriculture in Scotland, gives as his reason the importance of having one who "could teach "rules, established upon rational experiments, tried in our "own country."

Throughout the eighteenth century many experiments were made by agriculturists, and some experimental farms

were started, such as the farms of John Wynn Baker, of Laugblinston, near Dublin, and of Arthur Young, at Bradfield, Suffolk, upon both of which work was begun in 1763.

The enthusiasm for agricultural improvement that characterised the eighteenth century led to the formation of several societies; and in this part of England there was founded, in 1777, the great Bath Society for the encouragement of agriculture and commerce. The preface to its first volume of letters gives as the society's aims "The diffusion "of useful knowledge by means of letters and papers." But a very short experience showed how much there was to learn, and it is significant to find that the second volume lays particular stress on the necessity for experiments.

As manures became more numerous the scope of the "farmer's experiment" increased, and, encouraged by the great agricultural societies, farmers made many manurial experiments in the second half of the nineteenth century.

When county councils took over the charge of technical instruction a great impetus was given to the demonstration plot movement, and local experiments sprang up all over the country. Recently there have been symptoms of a reaction, and we sometimes hear it said that the only definite result of the demonstration plot has been an increased and useless expenditure.

It is true, unfortunately, that some, perhaps many, of the field plots of the past decade have been of an unsatisfactory type; but, in spite of shortcomings, the experimental plot is, in my opinion, a most useful—indeed, a necessary—means for the education of our farmers and the improvement of agriculture.

The greater number of criticisms have been aimed not at the system, but at faults in arranging and supervising local plots. There are, however, critics who condemn the field plot altogether, and who urge that the ordinary field is unsuited for experimental work, that no reliance can be placed on results obtained from small plots scattered over the length and breadth of a shire, and that experiments should either be conducted at a properly equipped experimental station, or abandoned.

This wholesale condemnation is quite unwarranted. I would be the last to question the usefulness of the experimental station, but it seems to me that it cannot cover the whole field of agricultural inquiry, and that the local plot must have a place in our sytem as well as the central institution.

Uses of the Local Plot.—

The uses of the local plot are :—

(1) To test conclusions arrived at on central stations ; that is, to form what, for want of a better name, may be called " auxiliary " plots.

Everyone engaged in carrying on agricultural experiments must feel that conclusions based on controlled experiments are not always satisfactory. Experiments on regular experimental farms—or it may be in pots and on prepared plots of soil—are necessary ; without them it would be impossible to make headway. But when such experiments have been brought to an end, the investigator often feels that he cannot draw general conclusions until he has tested his work under field conditions. His laboratory result has been

obtained under known conditions of soil, moisture and sunlight, and he may have successfully imitated the field conditions of his own immediate surroundings. But the question arises—How far do these represent the conditions of a county or group of counties? Field trials will often enable the investigator to supply a satisfactory answer to this question, and so may greatly extend the usefulness of laboratory work.

The danger of drawing general conclusions from particular premises has received widespread recognition among agriculturists. The experimental farm as a means of investigation was no sooner advocated than the local plot was recommended as an auxiliary. The first President of the Board of Agriculture, for example, when dealing with experimental farms in his Code of Agriculture, says that their experiments "should be repeated for confirmation, and, if possible, by "different persons, in different places, and on different "soils."

(2) Local plots may usefully be employed as "feeder" plots for a central station. In this capacity they may supply (*a*) materials, (*b*) facts, and (*c*) problems.

(*a*) Research in agriculture is very varied in its character. For one class of investigation, illustrated by the continuous wheat-growing experiment at Rothamsted, the field must adjoin a laboratory. But there are other cases in which this proximity is unnecessary. Take, for example, a line of work at present engaging our attention at Cambridge. Messrs. Wood and Berry are there investigating the effects of soil, climate and season on the growth and

composition of mangels. For this purpose it is necessary to have plots in different parts of the country, working in co-operation with the Department.

(*b*) The investigator is frequently asked to take up some point for which local knowledge is requisite. In such cases it is plain that he may—and often must—make use of the local plot for the purpose of getting precise information.

(*c*) There is no more fruitful source of problems than the local plot. No investigator can have experience of them without finding this out; indeed, their fruitfulness in this respect is at times perplexing, and may earn for the plot the undeserved epithet of "unsatisfactory."; the disposition to call any result which cannot be explained, contradictory and unsatisfactory, being one of the besetting sins of the agricultural expert. The problems presented by a few plots led Lawes to found Rothamsted, and in our own day problems raised by local plots led to the establishment of one of the most useful of county council institutions, Cockle Park.

(3) The third, the most common, and on the whole the most important use of the local plot, is as a "demonstration" plot. For the purpose of bringing home facts to the student—be he adult or schoolboy—there is nothing so good as the demonstration plot, with its living plant. That vegetation luxuriates on rich land and starves upon poor everyone knows, but to realise what abundance may do one must have seen the struggle with poverty. Nor is

it merely in size that plants differ. The dark green of the nitrogen-surfeited is not the dark green of the potash-starved swede. The yellow of the nitrogen-starved grass in spring is not the yellow that in autumn may follow a too liberal use of potash. Given proper conditions and an effective plan, and the demonstration plot asks for no lecturer to emphasise its lessons to the agriculturist of ordinary intelligence.

Unfortunately, the county agricultural expert has to deal with numbers who are not intelligent. But if he has secured sharp contrasts in his plots, even the unintelligent may learn from the demonstration, for the results may be arranged in diagram form, or explained in lectures illustrated by the lantern, in such a way as to appeal to all.

Demonstrations are most effective when plots have been subjected to the same treatment for years, as, for example, the grass plots in the park at Rothamsted. But even on temporary plots it is by no means difficult to get a telling result. Swedes, mangels and potatoes, placed side by side on a poor soil, and suitably manured, will furnish a first-rate demonstration.

Limitations of Local Plots.

I have been asked to deal in the second place with the limitations of experimental plots.

The limitations of experimental plots may in the last resort be traced to one cause, the difficulty of securing uniform soil. Absolutely uniform soils do not, of course, exist, and in practice great trouble is often experienced in finding a sufficiently uniform piece of land to contain from 10 to 20

small plots. Because of the difficulty of finding a uniform site we are often forced to employ smaller plots than would otherwise be desirable.

It may be urged that there are other fundamental difficulties than those of soil, and it is true that the experimenter is at the mercy of the weather and of the farmer. With respect to the first, it is admitted, of course, that weather will make all the difference to results, but in the matter of weather the plot merely represents the experience of the locality; and this is precisely what we want to ascertain. If weather were under control, half of the uses for experimental plots would disappear.

The farming difficulty is not in practice a serious one. The experimenter can usually ensure that local plots are as well off in this respect as those on experimental farms. If bad tillage should have affected one part of the experimental area more than another, a note may be made of the fact, and the results discarded or modified.

My own opinion is that the limitations of the experimental plot system have been exaggerated, and that the criticism directed against the system is due to false conceptions of the nature of field experiments, or it may be to imperfections in the methods of experimenters.

The false conception takes its rise in a false analogy. The field experiment is compared to the laboratory experiment. Now, these two kinds of experiment are essentially different in this—viz., that in the laboratory the conditions are under control, and the worker may adopt the deductive method when interpreting results; whereas in the field the conditions

are but partly under control, and the worker must pursue the plan of the naturalist, and observe before he is in a position to deduce.

There is nothing unscientific in the field experiment, be it remarked, because the faculty of observation must be exercised before reasoning is applied to the results. We are now fifty years past the time when agricultural science was an indoor study, but there is something radically wrong with the worker, who, in ignorance of the conditions, proceeds to discuss and to draw conclusions from the figures —the final results—of his experiments.

The agriculturist who wishes to learn from local plots and to teach others, must observe and must report the results of his observations; he must not confine himself to the figures obtained from the weigh-bridge.

For myself, I have always felt that the practical value of Rothamsted to the agriculturist of the latter half of last century was not so much due to the published figures as to the reflections and conclusions of that shrewd farmer, John Bennett Lawes. And no one who followed him through his fields could fail to see how largely his opinions and conclusions were based upon the systematic observation of growing crops.

Organization of Field Plots.—

Having discussed the uses and limitations of the local plot, we now come to the third part of my subject—the laying out, supervision and general mangement of experimental plots.

Plots intended to repeat and test the work of, or to collect materials for some central station, must be arranged with

these specific purposes in view, and their organisation will not be discussed here. The following remarks apply to the large number of plots laid out for demonstration purposes, or as farmers' experiments.

The first essential for the success of the local plot is that there should be some definite scheme. So obvious a statement may appear to be unnecessary, but unfortunately too many plots are laid out with aims that are anything but definite. We find that in the same experiment quite a number of different problems may be attacked, some of them suitable, others, it may be, quite unsuitable for the particular size of plot, the field or the locality.

In designing experiments it should be remembered that every extra plot adds to the difficulty of getting a suitable site; the larger the number of field trials to be laid down, the smaller should the number of plots in each be.

The teacher will generally find that there are two classes of intelligent agriculturist in his county, represented by (1) the man who knows everything, and (2) the man who wants to know everything. He himself probably belongs to the latter class and aspires to a place in the first, so that there is nothing so distasteful to the expert and his committee as this caution in taking up problems upon which I lay stress. Why confine experiments to single questions ? I am asked. Because, I reply, one question answered will teach more than two left unsettled.

In order to illustrate what I mean by dealing with a single question at a time, I will take the case of a common type of manurial experiment occupying from 12 to 16 plots, and

designed to teach farmers the uses of artificial manures on arable land. Half-a-dozen manures, more or less, are employed, and they are so arranged as to give information on three leading questions.

(1) The relative importance of nitrogenous, phosphatic and potash manures for the particular soil tested.

(2) The most economical sources of nitrogen, etc. Nitrate of soda is tested against sulphate of ammonia, superphosphate against basic slag, and sulphate of potash against kainit.

(3) The most economical quantity of manure.

Now, all these questions are of great importance to farmers, but should they all be mixed up in one experiment ? If we find under (2) that basic slag is much the better source of phosphoric acid for the particular soil, what is the use of testing the most profitable quantity of superphosphate under (3) ? And what is the use of carefully contrasting nitrate of soda and sulphate of ammonia under (2) if we find under (1) that neither nitrogeous manure has any particular value ?

This experiment should, of course, be carried out in three stages. In the first the constituent or constituents most required by the soil should be ascertained, in the second the best sources, and in the third the most profitable quantity of the suitable manure should have been sought for.

When the experimenter has but one or two stations to supervise, the elaborate experiment need not be objected to, but when one has a county to travel over it is better policy to limit the number of plots and to follow their

progress closely rather than to raise a number of separate issues and trust altogether to the results of the weigh-bridge.

Schemes for Experiments issued by the Board of Agriculture.—

I may here draw attention to a number of schemes suitable for local experiments which were published by the Board of Agriculture in 1903. These schemes were drawn up by the Agricultural Education Association, and they will be found helpful in laying out field experiments.

Types of Local Experiment.—

The local experiment may assume almost any form that the experimenter chooses to adopt, but there are four common types which may be noticed here.

(1) *Pasture experiments* modelled on the plan of the Tree-field experiment at Cockle Park. This particular type is adapted for poor, heavy clay pastures. It requires from 15 to 30 acres of land. The land is divided into three-acre plots, which are then differently manured, and the effects of the manures are tested by grazing sheep during the summer months. The results are very striking, and appeal strongly to farmers. For demonstration purposes this is one of the most useful of experiments. As the area is considerable, it is more expensive than other sorts, and, in addition to the initial outlay for fencing and manures, will probably cost 20s. to 30s. per acre per annum for upkeep, apart from supervision; but in a county where there is a considerable area of poor clay soil the cost of this demonstration would be trifling in comparison with the benefits to be derived.

(2) *Experiments on meadow hay.* These may be carried out on plots of from one-twentieth to a quarter of an acre;

the former size in duplicate is recommended. Experiments of this type are the easiest of all to conduct, and, as they are capable of affording most useful information, they should be popular in the West of England. One-half to one acre of land will furnish a site, and the cost is trifling. The plots should be fenced, except where the field always grows hay, and they should be permanently marked out by 4-inch grips cut with a spade.

(3) *Rotation experiments.* These are semi-permanent and intermediate in character, between the small local plot and the experimental station. In association with groups of temporary plots one or more rotation experiments should be conducted in every important agricultural tract in a county. The rotation experiment usually consists of from 12 to 20 quarter-acre plots, and the chief expense is incurred in weighing the crops. If a weigh-bridge exists on a farm the cost and trouble involved by rotation plots is small. The rotation experiment is *the* experiment for the well-managed home farm, and where landowners take an interest in agricultural education there should be no difficulty in arranging for as many as a county may require.

(4) *The temporary experiment on arable land.* This is the most common form for purposes of demonstration. It is usually made up of from 12 to 16 one-twentieth acre plots, which are set out before seed-time, and abandoned after the crops have been harvested. Temporary experiments are easily carried out, give the farmer very little trouble, and the cost to the local authority is small—from 20s. to 30s. for manure, one day's wages for two or three men who assist in weighing the crop, and the supervision. The best crops

for this class of experiment are swedes, turnips, mangels, potatoes and seeds hay.

The benefits to be derived from the local plot, whatever its type may be, will be greatly increased by association with a laboratory. The manures should be analysed and weighed out at the laboratory, so that the exact quantities necessary for each plot may be dispatched from one centre. In this way uniformity is secured, and mistakes prevented. And when the results from the plots come in, a laboratory will again prove useful in dealing with points that might otherwise have to pass unnoticed. It is not necessary that the county should have a laboratory of its own, though in large counties this may be an advantage. The ordinary county can make arrangements for analyses, etc., with the nearest agricultural school or college. The laboratory of the Durham College of Science, for example, is utilised by three, and that of the Cambridge University Department of Agriculture by nine counties.

Supervision of Local Plots.—

When his scheme has been drafted, the next point to be decided by the experimenter will be the number of field trials he can conduct. There are two busy seasons in connection with temporary plots—the sowing or planting season for fallow crops and the hay season for grass crops—and the number of experiments of each class which can be undertaken will be limited by these times of pressure. Having decided upon an approximate number, the experimenter will, during the previous winter and spring, fix upon sites. Hay plots will be measured and marked off in early winter, so that insoluble manures may be applied in good time ; but sites for turnips, etc., cannot be finally selected until the land has been

prepared for sowing. In winter the approximate site will be chosen, a sketch of the field made, its previous history will be inquired into, the width of the drills ascertained, and such other information got as will enable the experimenter to lay off his plots with the least possible loss of time when the busy season comes.

In laying out the plots care is necessary (1) to arrange check or duplicate plots, so that the uniformity or otherwise of the whole site may be tested ; (2) to arrange the manures and (if several crops are included) the crops, so as to get contrasts sharply marked and comparisons readily made. The value of the *experiment* will greatly depend on the skill shown in connection with the former, and the value of the *demonstration* on the skill shown in connection with the latter point.

All plots should be duplicated. In the case of roots and hay, when the site is very limited, it is better from the experimental—but not from the demonstration—point of view to have two one-fortieth than one one-twentieth acre plot. Where duplicates are not employed the "complete manure" plot should be repeated two or three times on different parts of the site.

Manures for an experiment should not be sent out until a few days before they are required. The manure for each plot must then be put up in separate sacks. Each sack must have the plot-number stencilled on it. In weighing out the manures it should be remembered that certain definite quantities of nitrogen, phosphoric acid, or potash, should be applied to each plot, and not so many pounds of nitrate of soda, superphosphate or kainit. Some commercial manures

vary greatly in quality, and unless attention is given to this point, the plots of one season will not compare with those of the next.

With the manures there should go a supply of numbered pegs. For crops like turnips, pegs 27″ X 2″ X 1″, painted white and stencilled with a 1-inch letter may be recommended.

By paying attention to preliminaries, and having everything in readiness when the sowing season comes on, the experimenter will find that he can easily lay off 20 small plots in a day, and have all the manures applied, the seed sown, the pegs inserted, and a plan made before he leaves the ground. Further (and this is a most important consideration at a time of year when the farmer is busy) he will have given the least possible trouble.

In setting out temporary plots on drills, it must be remembered that the produce of the outer drills should never be weighed, as there is always a chance that outer drills may differ from the rest of the plot. Provision should be made for this when sending out the manures. If, for example, one-twentieth acre plots, 58 feet 4 inches in length, are being laid out on 28-inch drills, it will be necessary to weigh 16 drills, and 18 drills will require manure. The extra drills will minimise the effect of wind, which is often very troublesome in laying out small plots. When there is wind the manure should be carried in a pail, and the workman can then sow "underhand" along the bottom of the drill without much risk. If the man stands erect and sows "round-arm" from a sowing sheet in the usual way, the lighter manures may be carried quite off the plots.

As will have been gathered from the remarks made above, I attach great importance to the inspection of plots. The notebook of the experimenter will often be of more use than the weigh-bridge. Every crop has its critical time when it should be watched with care. Thus, mixed seeds should be seen in April, and the progress of the red clover and rye grass should be followed throughout May. Mangels and other root crops should be seen shortly after singling, and want watching while growth is rapid, and so long as they are in danger from insects and fungoid diseases.

Grass or hay may be conveniently weighed in nets by means of a spring balance hung from a tripod. Root crops from small temporary plots should be weighed in the field on a sack weighing machine. When a blank row occurs in root crops, and the blank is an obvious accident, a few roots may be taken from the outside rows to fill up. A note of the weight introduced must be kept. When blanks are numerous in plots that have been properly manured the results from the plots had better be discarded. In unmanured or insufficiently manured plots, blanks may be normal, and the weight of the existing crop should be recorded with a note indicating the extent to which low weight was due to a high death-rate in the plants.

Reporting on Local Experiments.—

It will greatly assist the experimenter who takes charge of temporary demonstration plots if from the beginning he realises that in reporting the results he should interpret and explain them. In the rotation or meadow hay plot the land is under observation for several years, and results which are apparently contradictory may often be followed up and

successfully explained. In the temporary plot on arable land once the crop has been harvested there is little chance of finding any explanation of an unexpected result, and, unless the notebook contains some explanation, the experimenter should, in reporting, indicate that the particular figures were unlooked for, that he has no explanation to offer, or that he believes the result to be accidental. If he does not do this he should suppress the figures. If there is any possible explanation let it be given, and if duplicate plots agree the figures will generally deserve a place in a table, but figures which contradict each other should not be printed.

I am afraid that all of us who have had to publish reports on temporary plots have, at one time or another, been guilty of printing figures which we would now like to see destroyed. We understand and sympathise with the mood of Arthur Young, who, in after years, characterised the publication of the results of his first Bradfield experiments, made between 1763 and 1767, as "a sin of the blackest dye . . . .nothing "but ignorance, folly, presumption and rascality."

To some extent unsatisfactory reports have been printed in answer to the official's call. Public money has been spent. We must show how—something must be printed. Whether the material is ready or not, it is called for annually, alike by the county council and the public. There is never any question of the straw, bricks must be made.

Personally I do not complain. I feel that the spur of the official may be useful in causing me to turn aside from trying to learn and in forcing me to teach, or to try to teach, others ; but I do feel that the good name of the experimental plot is

often endangered by the desire of county councils and their experts to see the results of local experiments in print.

It is easy for the expert, if he be well qualified, to arrange for demonstrations that may make a text for useful lessons in the principles of agriculture; but in this particular line of reporting the field of usefulness is limited. And when it comes to learning new facts progress is not so fast, inquiries take time, reports must be prepared with greater caution, and especially is this the case when dealing with the results from small demonstration plots. It is not desirable that detailed figures should always be expected. In some circumstances they may be quite satisfactory; in others their publication would only serve to mislead.

A "working plan" necessary for Local Experiments.—

The county agricultural expert will not find much difficulty in keeping up a suitable number of rotation and meadow hay experiments. Once stations have been found, it is usually easy to arrange for a continuance. But the temporary plot on arable land is not meant to occupy the same farm year after year. It must move on, and fresh stations will be required annually.

While the expert is a stranger in the county he must be content to take land where it is offered to him, but as soon as possible he should construct a "working plan" for temporary plots. With a 1-inch geological map (Drift series) in his pocket, he should visit all parts of the county, and from information supplied by farmers he should divide his district into tracts, the classification being based on (1) Sub-soil or rock formation; (2) Aspect and elevation. He should then arrange to investigate, by means of temporary plots, each of

the tracts so mapped out. As a check on his shifting experiments, one or two sets of plots should remain on the original farms. These will enable him to gauge the effects of season on his results.

As a means of securing suitable sites, the best plan is to visit the selected districts in the previous winter, give one or two lectures on the results of experiments made in other parts of the county, and invite the co-operation of farmers. A leaflet explaining the object and nature of the experiments should be prepared, so that the farmer may know exactly what he is expected to do. This method was adopted by the Durham College of Science in its work in the county of Durham, and was found to be satisfactory.

Where the temporary plot is worked on a system, it serves not only to interest farmers, but to collect information which will prove most useful if treated statistically. The evidence given by the plot may not be exact in the laboratory sense ; but when the sifted evidence of a series of plots has been accumulated the agricultural expert will find it of great value to himself, and through him it should be of value to the farmers of the county.

The plan for experiments which I have sketched involves a great deal of work. It means that every county would require one or more agricultural experts of its own ; and I hope that the time is not very distant when every county may have its own expert. There is work enough, and, though at first the direct gain to the farmers might not be evident, I have no doubt whatever of the ultimate value of the expert's services.

For a time at least it will be desirable that county experts, if not already attached to a college, should co-operate with central institutions like those at Leeds and Reading, so that the work in each group of counties may follow a uniform plan.

Demonstration Plots for Agricultural Schools.—

There is one type of demonstration plot which has not yet been mentioned, and to which I must briefly allude. Demonstration plots for agricultural schools have not received much attention in this country. School gardens are common, but they are used in giving horticultural instruction, and do not come within the scope of my paper.

The demonstration plot for the agricultural school should have as its objects : (1) The teaching of boys to observe, by providing for them a graduated series of contrasts ; (2) The teaching of useful facts about field and garden crops. Wherever a poor and uniform soil can be obtained, these objects may be accomplished by laying off five parallel beds 15 feet wide, from 50 feet to 150 feet long, and separated by 3-foot paths. When the beds have been carefully cleaned, and when the soil has been exhausted by one or two years of preliminary cropping with mangels or potatoes, they should be manured as in the " five-plot test," so as to show the effects of a complete manure, of omitting from the complete manure nitrogen, phosphoric acid and potash in turn, and of applying no manure. Across the five beds there should be sown representatives of the Natural Orders from which our field and garden crops come. Such crops as the following will be suitable : Cereals, clover, beans, swedes, mustard, lettuces, parsnips, potatoes, mangels, buckwheat and onions.

If suitable soil has been chosen, very striking and instructive results will be got, sharp contrasts that appeal to the least observant, and slight differences on which the skill of the smartest boys may be exercised. And as the pupil will have before him for a whole season a number of different crops treated in the same way, and also each crop treated in five different ways, he may be taught a great deal about the habits of crops, the seasons at which they grow, the effects of manures on stem, tuber, bulb, leaf and seed production, the botanical characters of crops, the insect and fungoid pests which are certain to be abundant in the school garden, and the effects of weather on growth.

Additional beds showing the effects of farmyard manure and of lime would prove useful. The plots may also be enlarged in other directions. With a little ingenuity there should be no difficulty in providing in a garden of one acre object-lessons on rotations, effects of quality of seed, of time of sowing or planting, and on other matters likely to prove instructive to a young farmer.

THE FUNCTIONS OF AN AGRICULTURAL COLLEGE.

BY

JOHN PERCIVAL, M.A.,

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Before the function of an advanced college for the teaching of Agriculture can be satisfactorily discussed, it is necessary to direct attention to the fact that on account of the absence of any co-ordinated scheme of education in the past there are several more or less distinct classes of students who need special instruction, if anything they are taught is to be of service to them.

The chief types are briefly these :—

(1) The lad of 16 or 17 years of age who intends to become engaged in farming for himself or who will occupy the post of bailiff or steward of a farm.

(2) Students of similar age destined for the work of an estate agent.

(3) The expert and teacher of Agriculture.

(4) The farmer's son who has already had some experience of farm life and practice, and who is yet plastic and open-minded enough to benefit by short courses of systematised instruction.

(5) Lastly, in another class I place the farmer himself as we meet him on the land and in the market. He has probably never had any systematic instruction in any branch

of his industry, but has learnt all he knows after the manner of the old apprentices.

The work of an agricultural college must deal adequately with all these classes, but the chief aim is undoubtedly provision of a sound training for those who will become the farmers of the future. Let us, therefore, for a few minutes deal with the character and scope of the curriculum needful for this class.

I take it that the student goes to an agricultural college for the purpose of being trained in the salient principles of various sciences, such as chemistry, botany and physiology, and as much specialised detail of these sciences as is of immediate application to ordinary farm practice.

In addition to this, it is essential that adequate instruction should be provided in the principles and practice of book-keeping, together with a certain amount of training in simple land measurement, as well as in mechanics and the construction and adjustment of agricultural implements.

Side by side with this course of study, or interspersed with it, should run a course in Agriculture proper. By the latter I mean systematic instruction in various subjects of immediate import to the farmer, such as the cultivation of the soil, drainage, the nature, application and cost of manures, the sowing, cleaning, harvesting and uses of the ordinary farm crops ; the feeding, rearing and general management of stock ; the production and treatment of milk ; the uses of agricultural implements and machinery ; the cost of stocking and working a farm ; valuation, rent, rates and taxes, the law of landlord and tenant, and the elements of

political economy. The whole scheme should aim at the *education* of the student, and should also *instruct* him in the management of what is to be his business.

Wherever possible, all the subjects mentioned must be explained and illustrated, not only in the lecture-room, but on the farm and in the market, if the teaching is to obtain the interest of the student and become of real service to him.

In order to carry out this plan properly a college farm is an absolute necessity, and upon it the student should be compelled to spend a certain amount of time every day from the moment he enters the college. He should record as much as he can of the daily routine in the field, stables or dairy, and be encouraged to take a hand in the ordinary farm operations. It is pleasant to note that the majority of students are not without a sense of the dignity of manual labour, and, when pressed for time, I have found it useful to employ them on various kinds of piecework at ordinary rates of pay. In such cases the work has been generally more carefully and efficiently done than it would have been if labourers had been hired for the purpose.

In regard to the scientific side of the instruction to be given to the type of student we are discussing, I am convinced that we shall not be able to arrange a satisfactory course until some sort of foundation is laid in the elementary schools and a better preparation is made in the secondary schools of this country. At present we are compelled to teach the majority of our students those preliminary elements of science with which they should have become familiar before entry at the college, and valuable time is lost in this way. Agriculture as a subject should be avoided,

but Nature Study in the elementary schools and a mo organised form of scientific work in the secondary schoo would meet the case.

There is also another aspect of the scientific instructio which demands attention, and that is the maintenance o the proper balance between this part of his training and th teaching of subjects more immediately concerned with far practice and management.

While I recognise to the full the value of a thoroug training in the principles of chemistry, botany, zoology an similar sciences, I am very much inclined to think that the is a great tendency for the scientific work to be too elaborat and too extensive in its scope for the needs of the farme and some of the time devoted to it could be better spent i dealing with the agricultural side of the college curriculu on the lines I have already indicated.

The chemist frequently insists upon running his hobby a far as he can for all classes of students, demanding severa hours a week for training in the analysis of fertilisers an foodstuffs. The botanist does the same, running ri among fungi, bacteria and special vegetable pathology. Th zoologist and geologist also follow suit in their own particula subjects, with the result that if all these demands are allowe the student is gradually transformed into an imperfectly trained expert rather than a farmer who has to live upon th land.

For the teacher or agricultural expert such specialise scientific training is essential, but for the student wh ultimately intends to farm, it is, I venture to think, not onl unnecessary but valueless.

Some of the trouble has probably arisen in consequence of the standard set by various official examinations. Most of these examinations in their present form appear to me to be more suited to the needs of teachers and experts than *bonâ fide* farmers, being overloaded with science and subjects such as engineering and advanced surveying. At present we have no official examination quite suited to usefully test the competence of the farmer.

I do not for a moment, however, desire to minimise the importance of science in the college curriculum. It is absolutely essential that the modern agriculturist should receive an adequate training in this direction, for, without doubt, much of the pecuniary losses he suffers is due to a want of scientific knowledge. His indifference, for example, to the provisions of the Fertilisers and Feeding Stuffs Act, and his carelessness in regard to guarantees of analyses of his cakes and manures is almost entirely due to this deficiency, for he does not understand the meaning of such analyses when he has them. Nevertheless, if the subject is very carefully considered in the light of the ultimate needs of the student, and the time he can profitably be expected to spend upon it he would make a good farmer, with less pure science than he usually gets. This side of his training should be arranged more particularly with a view to the formation of accurate and methodical habits and the provision of a good working knowledge of elementary applied science. If this is done, he will have learnt enough for his everyday business ; the natural prejudice based on ignorance will be removed, and he will be led, as a matter of course, to seek assistance and advice from the college experts when his own knowledge is insufficient for his needs.

The time which an ordinary agricultural student should spend at a college depends largely upon the school training he has received. But, assuming that his previous education has not been defective, two years is, I think, all that is necessary when the curriculum is arranged and organised on the lines suggested.

The question of how these two years are to be allotted is a matter upon which difference of opinion exists. Some prefer the student to take three or four consecutive short winter courses, allowing him to return to assist on the farm during the busy time of the year. For my own part, I think it is very much better that no break of this kind should occur in the students' training beyond the ordinary college vacations, which should be spent on a farm.

It is difficult to maintain that continuity of interest which is essential for an efficient grasp of a subject when the course is broken up and spread over three or four years, and practically impossible for the student to take up satisfactorily each winter the thread of his work where he left off in the previous one.

The ideal course seems to me to be two years or two complete sessions at an agricultural college, followed by one or two years with some competent, up-to-date farmer of wide experience and interests.

There is no need in the present paper to deal with the training of the teacher and expert, as this is to be discussed later. These require a more extended education, three years being none too long for good results. In any case, a good general knowledge of the management of a farm such

as that which is demanded from the ordinary agricultural student should be required from all who intend to teach, as well as a specialised scientific training. For such men a fair test of efficiency is, I think, an honourable place in the National Diploma Examinations.

Now, in addition to the work already indicated, which should be the chief aim of all well-equipped and adequately staffed agricultural colleges, reference must be made to the so-called " short courses " as well as to the kind of assistance which such colleges can give to the practical farmer who has had no previous technical instruction.

The short courses are held during the winter months for farmers' sons who have left school some time. They have been generally very successful, and well attended by the class for which the work is designed.

As time goes on there will, no doubt, be less and less need for this course, since it is to be hoped that it will become a rare thing for a farmer to begin the practice of his industry without first obtaining a sound training in the principles underlying what is to be his life's work.

Nevertheless, there is present need for them, and schemes must be arranged accordingly. The curriculum I have found useful includes elementary science taught largely with a view of familiarising the student with scientific methods, and stimulating his powers of thought and observation. At the same time instruction is given in regard to the nature and management of the soil, the cultivation of farm crops, the nature and uses of artificial fertilisers, elementary veterinary hygiene, some simple system of keeping farm accounts, the

production and handling of milk and dairy produce, and similar so-called practical subjects, the usefulness of which is obvious.

Perhaps no instruction is so difficult to provide as that which is to benefit the practical farmer, and yet I venture to think that nothing would have a greater effect on the rapid building up of a complete scheme of agricultural education for the rising generation than the conversion of the so-called practical men to a hearty belief in the utility of systematic education, as a means of improving his industry.

The difficulty of convincing the farmer of the need for improved education on the lines we have already sketched has been experienced not only in this country, but the world over. He is of necessity prejudiced in greater or lesser degree against the scientific part of the training, and there is no need to wonder at his attitude. He himself has been able to do without it, and under the circumstances it would be unreasonable to expect him to become enamoured of its value.

A complete alteration of this state of affairs cannot well take place until one generation has passed through a college course. Nevertheless, I believe it is possible for the staff of an agricultural college greatly to assist the farmer in his business, and when the work is carried out with tact and judgment it removes much of the existing prejudice, and leads to that openness of mind which is an essential step to further educational development.

It is generally admitted that systematic courses of lectures on any subject are unsuited to the idiosyncrasies of

the farmer, whatever views we may hold as to their intrinsic merit. At any rate, this is the case until much patient work has been carried on along less ambitious lines.

I have found, however, that short addresses on definite subjects, such as the uses and price of nitrate of soda, the manuring and management of the barley crop, good and bad linseed cakes, have always been appreciated.

Besides these addresses, much interest is always evinced in well-arranged demonstrations on manurial problems.

Very important material aid can also be given to the farmer by the institution of cheap analyses and reports on the value and suitability of purchased manures and feeding stuffs for particular purposes, by the examination of his seed, and assistance in dealing with pests, weeds, fungi, and troubles in the dairy.

In this manner good work can be done, and the importance of it cannot well be over-estimated.

There is no time to deal with the functions of an agricultural college as a collegiate centre, but in this direction there is need for further development.

It is obvious that it would be inexpedient and foolish for each county to maintain a college of the type we are discussing. Nevertheless, the benefits of such colleges should extend to every district in the kingdom.

The Agricultural Department of the University College of Reading is officially connected with five surrounding counties. Demonstrations and field experiments are carried out upon farms in these areas, and residents in the counties

have certain privileges in regard to scholarships at the college. Analyses of feeding stuffs, manures, milk and other substances are made for the farmers at cheap rates; seeds are tested for them, and in other ways they are assisted by the college staff.

It would greatly add to the extension and consolidation of the agricultural education of the country if a special member of the college staff could be appointed for each of the counties contributing to its funds to superintend field trials, and to give a certain amount of elementary science or Nature study teaching with a rural bias, once or twice a week at some secondary school to which the junior scholarship students could go for their educution before passing on to the agricultural college. He would also endeavour to get into contact with the farmers, with a view of learning their peculiar local needs, and collect material for analysis and examination at the central college, so that the farmer could have the benefit of expert opinion and advice upon the value and suitability of the materials he uses.

A beginning of this kind has been made in the case of Dorset, the county lecturer there being on the staff of University College, Reading, and I am certain the plan could be extended with beneficial results. An impetus would be given to the application of science to agriculture which many of us believe is absolutely essential to the economic improvement of the industry.

The following Note has been kindly contributed by the Rev. J. B. McClellan, M.A., *Principal of the Royal Agricultural College, Cirencester.*

I have much pleasure in stating my hearty agreement with the main views and recommendations put forth in the admirable papers above submitted to the Conference. It is undoubtedly of the highest importance to the welfare of our greatest industry that all classes of farmers—and, in a minor degree, all agricultural labourers also—should be taught to recognise that agriculture, to reach its highest and most remunerative development under any given set of conditions, is an industry which must be reared on the solid foundation of scientific principles, and not on the empirical knowledge, however valuable, of the less difficult times of our forefathers. For this purpose a sound and well graded scientific education, suited to the case, should be brought within the reach not only, as at present, of the wealthier classes—already well provided for at this and other Colleges—but also (at a cost within their means) of the middle and humbler classes of farmers. To effect this object, organisation under the Board of Agriculture or other similar authority and the County Councils appears to be an expedient step. The methods to be adopted, whether by means of colleges, itinerant teachers, evening classes, etc., may be left to the wisdom of these authorities. An excellent example of what can be done for the farming class in these directions is found in the County of Cheshire, the County on which the Conference has drawn for two of its speakers. I refer to the agencies to a great extent initiated and developed in that County by our two former Students, Messrs. Rudd and Druce, and our former Professor of

Agriculture, Mr. W. McCracken, now Agent to the Earl of Crewe; and also to the work of the Cheshire Milk Producers' Association, of which the President is also a former Student, and which, I am informed by a gentleman who has lived among the farmers of the district for several years, is considered to be even of greater practical utility than all the lectures of teachers. At the same time, it is necessary not to lose sight of the valuable influence exercised on the agricultural development of the country by the landowners themselves, and by the managers of landed property. This influence, as is exemplified in very many of the large estates, has had, and probably has at present, an influence equal to, if not greater, than that exercised by the Board of Agriculture or the County Councils. This influence must be taken into consideration in any scheme of organisation. Further, considering the special importance of the subject of Agricultural Chemistry, alike in the laboratory and in the field, in reference to fertilisers, food-stuffs, dairy and other products of the farmer, it is a matter of more or less urgency, in my opinion, to establish at one or more suitable centres a State Laboratory and State Experimental Station, to which, either gratuitously or at a small cost, a farmer could look for guidance and protection from error and fraud. For these several objects adequate sums of public money may not unreasonably be asked and not unreasonably granted. They would tend materially to promote the welfare of the agricultural community, and so, in some measure, indirectly recompense the country for its outlay. They would also tend to secure the object which has steadily to be kept in view—viz., to obtain and retain efficient and contented farmers *on the land*. If this end be not secured, all labour and outlay will be in vain. And this

leads me to conclude with a word of caution. There is already an actual danger of a wider scope being given to this State-aided agricultural education than is consistent with the proper training of the *future farmer*, and with the expenditure of *public money*. The recruits for the future army of farmers must be trained for their own special industry and profession, and not for the industries and professions in other walks of life, otherwise the land and its cultivation will inevitably suffer. There is no sound or just reason whatever why the curriculum for the training contemplated should include education for the professions of land agents, surveyors and other correlated professions. If it be so framed and worked upon, then the once intending young farmer, at the end of his course, will have his head full of dreams of lectureships, land agencies, and such like, instead of the tasks and labours of the farm. Sooner or later, the farms will be despised and deserted. In framing, then, the curriculum of State-aided and rate-aided Colleges for the farmers, the object must not be the status and *kudos* of a staff, or the attraction of the wealthier classes, but the real needs of the class to which we have to look for our future farmers. And I most strongly deprecate, as an abuse of public money, certain to alienate public sympathy from the movement we desire, any outlay of public funds, whether of rates or taxes taken from the already over-burdened ratepayers and tax-payers, to provide for such professions, or to assist the education of the sons of the wealthier class of farmers, of the landed gentry, or of well-to-do commercial and professional men. Any outlay in these directions from the public purse must impose a needless and unjust burden on the non-agricultural classes, and exercise an impolitic and uncalled for interference with the various self-supporting institutions. The

classes to be assisted are the middle and humbler classes of intending farmers, and to the provision for their needs our energies and expenditure, in respect of public money, ought to be confined.

JOHN B. MCCLELLAN.

THE EDUCATION OF THE SMALL FARMER.

BY

LORD MONTEAGLE, K.P.,

President of the Irish Agricultural Organisation Society.

I fear I am but ill-equipped for addressing such a Conference as this on the very important question of the education of the small farmer, for I am neither an Educationist nor a farmer, large or small. I must hasten, therefore, to explain that I do not presume to theorise, still less to dogmatise, on the subject, but shall confine myself to explaining as clearly as I can within a brief compass what we are doing in Ireland in this matter, only wishing that a more competent exponent of the Irish system stood in my place; but cheered by the double belief that the agricultural community in the sister island will be ready and even eager to welcome the good news of Irish progress for our sake, as well as to profit by Irish experience for their own.

And first I must give a sketch of the Irish system before describing its practical working. It has a special interest from its novelty, for not only was the establishment of an Agricultural Department a new departure in Ireland—it is also still one of the newest and most up-to-date ventures of the kind in the world, having only been in existence five years. Again, for the particular purposes of this paper, Ireland offers this advantage, that, judged by English standards, it is a country of small farmers, and that the conditions of rural life there, notwithstanding all the

differences between the two islands, still resemble those of Great Britain sufficiently for instructive comparison. One salient difference, however, between the present situation in England and that existing in Ireland six years ago may, perhaps, somewhat impair the value of such comparison. When Mr. Gerald Balfour had the statesmanship to tackle this branch of the Irish question six years ago he had a *tabula rasa* before him. Ireland as regards agricultural education—and, indeed, technical education generally—was a blank sheet of paper. There was no need to clean the slate, as I daresay the President of the English Board of Agriculture, whom we welcome here to-day, sometimes longs to do. But, at any rate, Mr. Gerald Balfour had a grand opportunity, and he fully availed himself of it, for the edifice he designed certainly has unity without uniformity, variety of detail without sacrificing the larger symmetry of its proportions. The whole fabric is "broad based upon the people's will," as expressed through a dual representative system—one local, the other centralised. First, there is in each county a Committee for Agriculture appointed by the County Council which administers any rate raised by the latter for the purpose, and initiates county schemes for agricultural education, etc., subject to the control of the Central Department. Secondly, there is an Agricultural Council, composed of two delegates appointed by each County Council, together with half that number nominated by the Department for each of the four provinces, making 102 members in all. This Council in turn elects, through four provincial Committees (into which it is for this purpose divided), two administrative Boards—one for Agriculture and the other for Technical Instruction—composed of twelve and twenty-one members respectively, including in each case a

small nominated contingent and an official element representing the Department; and these two Boards control the expenditure of the Department's Endowment Fund in their respective spheres.

Again, corresponding to this dual system of representation, the financial arrangements are twofold, embracing (1) local rates raised by the County or Borough Councils, and (2) grants and subventions made in aid of the local rates by the Department under the control of the Boards above mentioned, the general proportion being that the local contribution is four-ninths and the Department's five-ninths of the total. I may add that every county in Ireland has raised such a rate, whereas only two English counties have done so, making between them the paltry sum of £505, while the Customs and Excise Grant to English counties is £516,200. So that the local contribution in England is less than 2s. per cent. of the whole, as compared with over £40 per cent. in Ireland, which latter, I submit, is not bad for a poor country like the sister island.

It will be observed that the main principles of the system are: First, local initiative with central control; and secondly, that this control is exercised through bodies partly representative and partly official. This slight sketch must suffice to describe the system for our present purpose; but before I pass on I must just point out that whatever success it has had is largely due to this dual character and to the skill with which its authors blended these two principles, avoiding administrative anarchy on the one hand and official rigidity on the other. In Ireland the tendency is, perhaps, towards excessive centralisation, but the

opposite tendency, which is, I suppose, rather inherent in English institutions, has also its dangers and drawbacks, and certainly the co-ordinating influence of our Agricultural Department has proved as essential in practical operation as local initiative.

Coming now to the work done. One of the first difficulties which confronted the Vice-President of the new Department and his official advisers arose from the natural inclination of mankind to seek salvation in imposing institutions to which the imaginative Irishman is specially prone, and from which the more practical Englishman is not wholly free. And Sir Horace Plunkett and his staff deserve the greatest credit for resisting alike the temptation from within and the pressure from without in this direction. They recognised from the outset that the first essential for encouraging agricultural education was to arouse the interest of the farmers themselves (especially the smaller farmers) in the matter; to make them realise the bearing of science on their business, and thus provoke a desire amongst them to gain for their sons those educational advantages of which they felt the need themselves. Some of the large farmers might have sent their sons to Agricultural Colleges in Dublin, Belfast or Cork, but the mass of the smaller ones could not spare their sons from the work of the farm or afford the expense of their residence at a distance, and could only be reached by something much nearer to them, and in the first instance, brought to their very door. The institutions could be speedily provided once the demand existed, but the first step was to create that demand. Accordingly, they lost no time in publicly announcing that the institutions must wait,*

* This does not refer to the training of teachers, for which of course "institutions" are essential, and to which, as a necessary preliminary to any teaching at all, the Department gave its attention at the very outset.

and they commenced operations with pioneers sent in the first place free of cost to the locality, who delivered popular lantern lectures. These attracted good audiences, and soon created in many counties an appetite for more systematic instruction. The next step was the providing of such instruction by itinerants appointed by the County Committee under a scheme subsidised by the Department as described above, the instruction being still rather of a pioneer character, and addressed to the farmers and labourers themselves—to adults, not to the rising generation—care being taken that it should be of a thoroughly practical nature. These itinerant agricultural instructors have proved so successful, and so won the confidence of the farmers, that their number has rapidly increased. Ten counties had them during the twelve months just ended, and nine more are appointing them for the twelve months just beginning, while several counties are employing a second. Their work consists of two branches. In winter they deliver courses of evening lectures extending over four or five weeks, one lecture a week being given in each of a group of five villages, the following morning being devoted to visiting some of the farms in the neighbourhood, where a competent instructor will not fail to learn as well as to teach, to study local conditions and methods of farming, and will get to know the farmers and gain their confidence. The subjects of such lectures are usually soils, manures, seeds, pastures and crops, and the breeding, feeding and management of live stock. In summer their principal duties are the supervision of "demonstration" and "experimental" plots, and the testing of the results of these; and as evidence of the stimulating effect of such instruction, I may mention that when visiting two of these plots the other day in a neighbouring county I found that the farmers, who had given

their land for the purpose and were conducting the " demonstrations " under the direction of the itinerant, were about to send their sons to Glasnevin for a winter course of instruction in scientific farming.

In order to follow up this pioneer work, a further step was taken in three or four counties last winter by instituting winter courses for the sons of farmers and labourers, one of the most successful of which was at Downpatrick, in County Down. And here we arrive at last at " education " in the stricter sense of the word, for which the work of the itinerants has been the preparation. And the effective demand for these courses is the best proof of the value of these itinerants, and amply justifies the Fabian policy of the Department in this matter. In one of these counties, where such a winter course of six weeks was projected, there were 71 applicants for 20 places, of whom 58 passed a qualifying examination, out of whom eventually 48 were selected; two courses, one after the other, being arranged for 24 students each, the instruction being given by the county itinerant, with expert assistance in special subjects. This is indeed a healthy contrast to the case of an agricultural college I have heard of at this side of the water, in which there were nine professors or teachers, and seven pupils. And the cry in Ireland is still " they come." There were courses of this kind last winter in three counties ; for the coming winter the number is increased to eight, while several others contemplate developing in this direction when the pioneer work of the itinerants has produced its full effect.

One reason for their popularity is, I believe, the eminently

practical character of the instruction, and it is found that the smaller the farms the more essential it is to lean towards the practical side, introducing theory gradually and by inference. For instance, with labourers the most successful beginnings have been made with purely practical instruction in poultry management and horticulture; and in the poorer districts of the South and West it is probable that a somewhat similar policy will be advisable. The curriculum in these courses generally includes the application of science to farming under the heads of seeds, manures and feeding stuffs, and some more purely practical subjects such as poultry. Three morning hours are spent in the class-room, and two in the afternoon in practical demonstration, and even the class-room teaching is rather tutorial and educational than mere instruction, assisting the pupils each to make their own discoveries rather than lecturing to a whole class, still less teaching them out of text-books. Pupils beyond walking distance are given a travelling allowance and their dinner, but none of them are boarded. It seems probable that in a few years most of the counties in Ireland will have reached this stage and started these winter courses, and then there will doubtless arise a demand for regular agricultural schools or colleges for each province, if not for each county; but these, when they come in due time, will be adapted rather to the sons of large farmers and to exceptionally gifted boys of a humbler class, and I believe that for many a long day these winter courses for day pupils will remain the best means which the State can adopt for educating the small farmer—at any rate, in Ireland.

But there is another branch of Education in the wider sense, which is almost more important for the small farmer

than agricultural instruction—namely, the power of combination or association, for it is no mere figure of speech to say that this has a distinct educational value, quite apart from its practical advantages or promise of direct pecuniary gain. In these days of steam and electricity, the individual, however energetic and self-helpful, is powerless as a mere unit unless he learns to organise his energies and talents in combination with others; and this applies to farming as much as to any other industry, and, above all, to the small farmer. And we have found in Ireland (where I have been privileged to work with Sir Horace Plunkett in starting agricultural co-operation now for some fifteen years past) that education and organisation must go hand in hand, and that while the State can alone supply the former, it cannot supply the latter, which must be done by the farmers themselves acting together to produce the best results. English farmers have nothing to learn from us in the way of self-help, that great builder up of character; but you may have too much even of a good thing, and if the independence of English farmers leads them to disregard or despise that other potent factor in modern life—the power of combination—they will find it well-nigh impossible to compete with the foreigner, equipped as he now is with every advantage of co-operative organisation. But this is a theme which I find it easier to begin than to end, and my only justification for alluding to it here is, as I say, its educational value, by instilling the great moral lesson that the individual only attains his highest and truest development in the life of the whole body of which he is a member. With this digression, therefore, I must turn for a moment before I stop to one aspect of agricultural education to which I have not alluded. Any

sound education must begin in the primary school. That is the only sure foundation. But here is just our greatest want in Ireland. In England one hears many complaints of the unsuitability of the primary schools to rural conditions, but you have, at any rate, attained to a " divine discontent " with the existing state of things, and your indefatigable Honorary Secretary, Mr. Medd, is no longer a voice crying in the wilderness when he pleads for " Nature Study." In Ireland, alas ! the term is as yet hardly known ; we are still under the thraldom of abstract methods of teaching, and have hardly escaped from the blighting influence of the Results System, the effects of which still survive, though it was formally abolished some three or four years ago. And the ideal of the average Irish child—both boys and girls—is to be a National school-teacher or a clerk, grinding out the old formulas and stereotyping the barren ideals. And so it happens that as regards this most vital portion of the subject, I am like " an infant crying in the night, and with no language but a cry." And yet still somehow I believe, or dimly feel, that a brighter day is coming for Ireland even in the primary school—now, alas ! so often dreary and uninspiring—and that if in other ways you have something to learn from us, so in the awakening which such a Conference as this betokens amongst English Educationists and Agriculturists we in Ireland shall make our way to the light.

THE EDUCATION OF THE SMALL FARMER.

BY

ROBERT WALLACE,

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The weighty words uttered at Skipton a few weeks ago by His Grace the Duke of Devonshire have brought the necessity of remodelling the system of education for rural districts to public notice. Although his remarks were specially directed to the case of the labouring classes, they are equally applicable to that of the small working farmer class.

Every effort will be made, we trust, in the not far distant future by the Local Authorities, who now have the power, to bring our liberal and costly system of education into line with recent developments and into harmony with local conditions and requirements, in the hope that, among other results, the depletion of the population of rural districts may be stayed in the interests alike of the individual and the community.

Whether or not even a perfect system of education will stem the tide of rural depopulation yet remains to be seen. This shifting of the centres of population is no local matter confined to one class, to one people, or to one country. Practically universal in all civilised countries that are progressive, it seems to be one of the natural evil consequences of national prosperity; but where (to the injury alike of

those who go and those who stay) these admittedly natural changes are taking place too rapidly before circumstances can adjust themselves to the new order of things, it is just possible that an educational system, established on rational lines, might have a powerful influence for good.

I am in full sympathy with the spirit of the Duke of Devonshire's utterances. Nearly twenty years ago I expressed my views in the following terms, and it is almost universally admitted by those who can speak with authority on the subject, that, in spite of the vast sums of money that have been spent, the educational position is worse to-day than it was at that time.* I wrote :—

" What calls loudly for a protest is the virtual prohibition " of boys learning, at the only time when they can do so " perfectly, the one branch of their business by which they " themselves shall live and in time rear families.

" The present system of elementary education is much " too one-sided. It is the extreme into which we have " fallen after a long period of deficiency in the branch which " now receives too much attention. Youth is entirely spent " in the acquiring of book-learning. Interests and inclina- " tions which must develop are led into channels far away " from the employments of the future life. Work, when it " has to be done, is performed as a drudgery and with a heavy " heart. The frame is not trained, as it is being built up by " Nature, to dexterity and efficiency, nor yet is it strengthened " and enlarged by that practice which always precedes

* From the Introduction to the 3rd Edition of " Farm Live Stock of Great Britain, slightly modifie l from that of the 1st Edition which appeared in 1885

" efficiency. Why should not our educational system " provide for the training of our labouring classes including " the small working farmer] in both its branches, manual " and mental, when this would conduce so much to their " future happiness and the public good ?

" Agriculture is not like an ordinary trade or profession " which admits of hard-and-fast rules being laid down, and " of being learnt in so many years, even after a man reaches " maturity. Its principles, whether they are acquired by " the farmer or by the labourer, have to be taken in little by " little through a long period of time, which must embrace a " considerable proportion of the boyish days. The know- " ledge must come, as it were, instinctively. It cannot be " learned by rote."

The following views were also expressed at the same time, but more particularly in connection with the Live Stock Branch of Rural Economy. It is probably in this division of the work that failure can most speedily occur, but the same principle governs all branches of it, and the subjoined illustration is applicable to all.

" It is not only a knowledge of animals that a boy gains " by associating with them, but also an interest in them. " They are the playthings of his youth and the objects of his " affections as he grows in years. A first-rate judge and " prize-winner—it matters not in what class of stock—is " invariably found to spend much of his spare time in gloating " over the points of his favourite beasts. It is only in this " way, and not from books, that a man can ever master the " details of structure and the peculiarities of breed and

" constitution, and obtain that knowledge which can alone " lead to victory in the show ring. A servant entrusted " with the management of stock must make his charge his " hobby if he is to be successful in his avocation.

" A man is quite as happy in the enjoyment of one hobby " as of another, provided it be of his own choice ; and it is " much better for himself, on account of his own comfort " as well as of the permanency of his occupation and amount of " remuneration for the same, if the hobby is that by which " he wins his daily bread. One of the weak points in the " present system of education, so far as small farmers and " agricultural labourers are concerned, is that no adequate " provision is made for their learning while young (the time " when all the deepest and most lasting impressions are " formed) the business by which they live."

It is a lamentable fact that a vast majority of the children of rural districts who attend school are devoting the smallest possible amount of the time spent at school to education. The bulk of it, instead, is lost in idleness ; and, if anything is acquired, it is the fatal habit of doing nothing, or even a positive disinclination and incapacity for useful employment ; so that when the 14 years' limit of the Elementary School age is reached the pupils have not received education sufficient to fit them for a social position better than that of a labourer, while their future usefulness has been seriously impaired by their being prevented from learning how to use their hands. The deplorable backwardness in education of country children is due to a combination of causes, foremost among which are :—

(1) A lack of interest on the part of the children

themselves, encouraged by the indifference of their parents, who do not fully appreciate the privileges for which they do not pay, and neglect to supervise the home preparation of lessons.

(2) The very small proportion of children that are before the age of 13 or 14 capable of learning, without constant home supervision and attention, enough of the elements of education to enable them to benefit by the school instruction received at such an early stage of brain development.

(3) The overshadowing influence of the loafing tendency acquired by habitual idleness at school, especially during the last year of compulsory attendance, which leads to even less real work being done by the scholar than formerly. A fixed age at which a boy may escape from his hated retention at school thus exercises a pernicious influence.

(4) The bad example of the elder boys reacts on the younger boys, even if they do not actually interfere—as loafers are so apt to do—with the efforts of those who would naturally incline to work.

(5) The tendency in the educational system to reduce all efforts to one common level, making it practically impossible for a brilliant boy to shape a career for himself in keeping with his higher mental development.

(6) The want of means by which such a boy, anxious to improve himself, can extend his period of study beyond the Elementary School age. The giving of small sums—say, £10 or £15—as scholarships for a few years is not sufficient

help, and leads, as a rule, to no satisfactory result, while it may do harm as an unsettling influence.

(7) The increased remuneration for services which attract boys from school who would have benefited by attending for years during winter after the age of compulsory attendance is past.

It is generally admitted by those who are old enough to remember that the old Scottish Parochial system of education gave more satisfactory results in country districts than the more elaborate and much more costly School Board system. Under the Parochial schoolmaster a brilliant boy was able to extend his course of study and prepare for a University career—an impossibility in these latter days in most schools. The encouragement now offered is all in the wrong direction. The clever boy who possesses brains which education would develop, and who passes a specified standard before he reaches full school age, is permitted to leave before he can have gained any real permanent advantage at school. The material which the schoolmaster could have turned to good account is allowed to slip away, and his time is occupied in a vain attempt to elevate to a common level a crowd of common mediocrities. The average country boy was formerly permitted to engage in practical work at busy seasons, and, long before he had reached the present school limit he had learned to work with his hands, and had overcome the natural prejudice against work.

The old Parochial system was an ideal one for rural districts—boys getting away to work as soon as they were able, in the busy summer season, and returning to school in

the winter. Nor did this militate against true *education* as distinguished from the present-day *cram*. During winter youths of 18 years of age and over might be seen in the old Parish School, busy studying with matured brain such subjects as mathematics, mensuration, book-keeping and classics, with results unequalled by any modern method.

The Duke of Devonshire's remarks clearly point to the readmission of hand labour into the training of the farm labourers and small farmers of the future, but the great question is yet to be solved : How is this to be accomplished ?

There are two courses open : the right and the wrong, the natural and the artificial, the practical and the theoretical, the proved and the experimental. In other words, there is :

First, the method of providing facilities for the children of the population who must work with their hands, to take a share in the great volume of farm work, conducted on commercial principles, going on in the country, where their help is urgently wanted at busy seasons ; where they would work at home under parental guidance, or be paid according to their market value, and be carefully supervised and instructed ; and where carelessness, idleness and inefficiency would be at once detected and the necessary remedy applied.

And there is the second method—the establishment of school farms on which everything would be artificial, being created to meet a condition of things which exists on no ordinary farm ; where the arrangement of work would be unnatural and thorough supervision of an abnormal number of boys impossible ; where everything would be done at great expense, because it would not be based on commercial

lines nor on economic principles; where the invaluable supervision of a parent or of a zealous employer would be wanting; and where the personal interest of a boy or a couple of boys together (which it is possible to develop on a farm by giving them minor positions of trust and a share in the responsibility) would be merged in the cumulative claims of a number too great to handle.

Schemes have been introduced in different parts of the country where small numbers—probably a dozen boys at one centre—have, at considerable expense, gone through a course of practical instruction in horticulture; but what is wanted is a system applicable to the great mass of the working farmer population, and not merely to a selected and favoured few.

Not only should school regulations be relaxed, so that manual labour may be undertaken by the children of small farmers and labourers at the earliest age that their parents or their employers desire to have them, but every encouragement should be given to induce the children to take advantage of the opportunity, with proper safeguards against their spending their time in idleness.

The proposal to permit boys to leave school at 12, if they will attend night schools till 16 years old, may suit town centres better than the present plan, but it is not likely to succeed in wide country districts. The long distances that must be travelled to reach an evening class, and the somnolent condition of youths who have been working by day in the fresh air, hopelessly militate against the proposal. There is an admitted difficulty in getting the children of hired

labourers to return to school after 14 years of age, as the pecuniary sacrifice of remaining out of a regular annual engagement is considerable ; but there should be no serious difficulty in the case of the sons of small farmers who ought to be induced to continue their general education during the winter months for at least two or three years longer. Beyond the facilities for Nature Study (if only it were more generally conducted on rational lines) and a grounding in Elementary Science in schools, no anxiety need be felt to provide special agricultural instruction for youths of this age. They are too young to benefit by any extensive course of agricultural instruction which would divert their attention from their general education. Their growth in a knowledge of Agriculture may be confidently left to the care bestowed during busy seasons upon them, and to their taking part in the practice of it under their fathers, who, of all instructors, are at this time the most interested and the most successful.

If a sound, practical basis be then laid, the theoretical and scientific training coming at a later period finds a well-prepared subject to operate on, with a mind enlarged by natural development in a congenial atmosphere. To attempt to teach a boy scientific agriculture before he acquires experience of the practice of it, is putting the cart before the horse, and at best can only attain a modified success.

In Denmark, where great things have been accomplished in Dairy Instruction by the numerous High Schools of the country, the instruction has been given to youths of the peasant and yeoman classes between 18 and 25 years of age. It has also been my own experience as a teacher of Agri-

culture for more than 22 years, that, until a youth is about 20 years of age—or, in many cases, a few years older—it is a waste of time and money to attempt to properly interest him in the theories associated with a thorough knowledge of the subject, and that he is much more usefully employed in developing a wider personal experience of practical agriculture.

A youth in his teens rarely acquires a sufficiently serious view of life to encourage him to put out his best mental effort, apart from the fact that at that early age the brain is not developed so as to take full advantage of theoretical instruction. When the final stage of his education is reached in an Agricultural School or under some systematic course of instruction, " What the young farmer should learn is not," as I have on a former occasion explained, " ordinary farm " work—viz., to plough and harrow a given area in a day. " He can become an expert in that kind of thing at home to " greatest advantage, without cost for instruction, and at " the same time prove a valuable aid to his father. He " requires to be taught just those things which are not to be " learned on an ordinary farm, to have explained to him the " meaning of processes which are founded upon scientific " principles, and to become familiar with the common facts " of those sciences which bear upon agricultural practice."

Class instruction should be extended to field classes, in which demonstration experiment plots as a supplement to the ordinary practices of the farm might be made use of.

In this connection the great educational influence of Agricultural and Live-Stock Shows should be fully taken advantage of.

In the case of the small farmer, whose difficulty is to find time to leave the practical side of his occupation to attend a lengthened course of instruction, the short course of four to six weeks' duration has proved to be most successful, both on a large scale in the United States and Canada, and on a modest scale in this country and in the State of Victoria. No great amount of instruction can be given in such a short period; but a vast amount of interest can be created, which in turn develops private reading, and the first course may be followed by attendance at additional short courses.

One conspicuous merit the short attendance system possesses is that it does not so distract the attention of the pupils from the practical side of the training that they become unsettled, as country lads are so liable to be, when retained in a populous centre during the period of a full course of instruction. A full winter course of instruction—like that of Edinburgh University and, following it, a good many of the successful recently established Agriculture Schools in this country—is suitable for the sons of large farmers; but it involves the sacrifice of too much time for the small working farmer—a circumstance which is becoming more and more pronounced owing to the scarcity of hired labour in country districts. Although the system of instruction by short courses is not by any means perfect, it is the best possible compromise available to meet the circumstances. It is a decided step in the right direction, and opens the way to a higher order of things when our system of education reaches a further stage of development.

THE EDUCATION OF THE SMALL FARMER.

BY

FREDERICK VERNEY,

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To a Londoner having a seat on the London as well as on the Bucks County Council, the problem before us to-day presents itself in this way. While the country is being depopulated, London is being over-populated—an equally serious matter for the country on the one hand and for London on the other. It is a general complaint among the farmers of the home counties that the best lads are leaving the country to get better wages in London ; and small blame to them, if they can only look forward in the country to a miserable wage of about fourteen shillings a week. In addition to all the ordinary attractions of town life, its interest, excitement and fun, there is a vast amount of artificial attraction, provided by a very large expenditure of public funds on polytechnics and kindred institutions, besides scholarships (senior and junior) and other helps in the training of children and of young men and women. For these purposes sums considerably over £200,000 were annually voted by the Technical Education Board for London during the recent years of its life. The money was spent for an excellent purpose, but you could not put before an intelligent country lad a stronger attraction to go to London than that he should be given in London, largely at the public cost, a practical training of a kind to satisfy his ambitions and to ensure him ample wages as a skilled artisan. The Polytechnic, indeed, does more than this. It adds to the manual skill of the craftsman just that kind of knowledge which fits him

for promotion into the ranks of employers. And here I desire to emphasise and accentuate the contrast pointed out by Sir William Hart-Dyke in his paper, the contrast between the energy and concentrated effort by which the town apprentice or workman benefits so largely, and the apathy and indifference which leaves undone for the farm lad what is done for the workshop apprentice. Who will deny that there is as much scope for skill on the farm as there is in the workshop ? Where there is an opening for skill there is the need for education—education of the kind so forcibly and eloquently described for us by the last speaker, an education, when applied to agriculture, that turns the farm lad into a skilled workman who can command high wages as a labourer, will test his skill in his garden or his allotment, and after some years' experience will be fit to take a farm of his own. It seems to me impossible—or, at any rate, highly undesirable —to treat the education of the labourer on the one hand, and that of the small farmer on the other, in watertight compartments, so as to separate the one from the other. The best of the labourers should be given every opportunity of promotion in their own industry, just as the best artisans get promotion in theirs ; and the aim and object of this paper is to plead for such an education as will enable the best of the farm labourers to become small, or even big, farmers, by giving an equality of opportunity in both cases. In every trade the greater skill commands the higher pay. Once introduce into agriculture the skill for which it offers abundant scope : in this way, and in this way only, can the wages rise ; and then the scientific farmer, big or small, backed by the skilled workman, will make farming in England something that has never yet been known, and then the country will be able to hold its own in rivalry with the

towns, with its own interests as absorbing, and at least as elevating, as the majority of those which centre round lives spent in such a place as London.

But we sometimes hear it said, in reference to practical training in our schools, "Don't specialise too early." When "specialisation" means giving up elementary and fundamental teaching before it has been thoroughly mastered, and substituting for it something more advanced, the warning is very necessary; but when it means the daily use and adaptation in the school of the elementary teaching and knowledge to what is to be the work of the years that follow, the warning is not only unnecessary but mischievous. "Don't specialise too soon" is an excellent maxim for a lad of wealth and leisure who can spend from five to ten years in laying a solid foundation of general knowledge, so as to specialise on that during the next five or ten years, but it is a counsel of unattainable perfection for those whose education is being considered here to-day, boys whose parents want them to work on the farm at ten or eleven, or even younger, demand that they shall do so at twelve, and are ready to lead a rebellion against any law keeping them at school till they are fourteen. A boy of this class must specialise pretty early if he is to specialise at all. He may indeed begin "specialising" between two and three years old, when he toddles about his father's garden watching his elders doing the garden work. From infancy the child that is brought up in the atmosphere of the garden or the farm has the advantage of the best Kindergarten that exists. It will fit him, as nothing else can, for the "Nature Study" which, it is hoped, will be increasingly taught in our rural schools by teachers as highly qualified in this—as teachers now are in any other—branch

of knowledge generally taught in the highest type of elementary schools. When agriculture is as carefully learnt, and as systematically taught as other subjects of less national importance, then, and not till then, shall we know what profits, what wages, and what general prosperity agriculture is capable of giving to our country. Every teacher properly qualified as a Nature student will tell us that a boy brought up in a garden or on a farm is in the most receptive and intelligent condition for getting hold of the essentials of a country education.

There is one plea which can hardly be too strongly urged, but which is hardly ever used, that is, that we should stop the teaching which is not wanted for the sake of that which is. One naturally speaks of such a subject with awe in the presence of Mr. Morant (the Permanent Secretary of the Board of Education), but I see with interest and hope that in the recently published Education Code, prefaced by an Introduction, which probably is largely his work, and which summarises in an excellent fashion the essential objects and aims of a sound educational training, nothing is said about the necessity of teaching or learning spelling or grammar. When the time for the necessary parts of education is so short, the months spent in " specialising " in such a hopeless conglomeration of inaccuracies and absurdities as go to make up English spelling are months wasted in a fruitless struggle to remember what is not worth remembering, and what is often forgotten, because there is neither rule nor reason of etymology or of sound to prompt the mind or to help the memory. William Tyndale, translator of the Bible into English, is said to have spelt the word " it " in eight different ways, deviating into " I T " in his least imagi-

native moods. Was he not an educated man? If there were two men of the last generation who had a right to express an opinion on English spelling they were Bishop Thirlwall, of St. David's, and Professor Max Müller. The Bishop said: "I look upon the established system—if an "accidental custom may be so called—as a mass of anomalies, "the growth of ignorance and chance, equally repugnant to "good taste and common sense. But I am aware that the "public cling to these anomalies with a tenacity proportioned "to their absurdity, and are jealous of all encroachment on "ground consecrated to the free play of blind caprice."

Professor Max Müller speaks of "the actual mischief "done by subjecting young minds to the illogical and tedious "drudgery" of learning the present spelling of English (Vol. III. of Max Müller's Collected Works). The time of both teachers and children is far too valuable and too short to allow so much of it to be wasted on learning "a mass of "anomalies the growth of ignorance and chance."

An equally strong indictment might easily be drawn against the expenditure of much time in teaching English grammar, and some other subjects almost as unnecessary and as unprofitable for the intellectual development of any country child. By getting rid of the teaching that is not wanted we give place and opportunity for the teaching which is wanted. And our object must be to "specialise" in the sense of adapting our elementary teaching to what is useful and practical, so early and so thoroughly that every boy and girl will understand that what they are learning will be used and enjoyed all their lives long. No one in his senses would try to teach farming to a boy at school, but no sensible teacher would wish to teach a boy

that which can have no reference whatever either to the work, the leisure, or the amusements of his future life. How can we carry on the school teaching of the child into later life, so that there shall never be a break between the compulsion of childhood and the voluntary discipline of manhood? For the country schools let Nature Study enter largely into the curriculum. Let us carry into practice the excellent programme set out in the Introduction to the Code for 1904, and "make the best use of the school years available in "assisting both boys and girls, according to their different "needs, to fit themselves practically, as well as intellectually, "for the work (and, let us add, 'the enjoyments') of "life. With this purpose in view, it will be the aim of the "school to train the children carefully in habits of observa- "tion and clear reasoning, so that they may gain an intelli- "gent acquaintance with some of the facts and laws of "Nature." This does not mean the introduction of a new set of subjects into an already overcrowded curriculum, but the omission of what is a useless sham and the substitution of a programme which will bring into daily and practical use the growing knowledge given to the child by direct appeals to his reasoning and observing faculties.

And when school life is ended there comes the most difficult and important stage of all. If education is to be dropped at this stage there will be a waste of public money nothing less than scandalous—the waste which, in the cases of many thousands of children, is going on now. The return which ought to be given to the community by the young man or young woman, who has been largely taught out of public funds, is a return in skilled work by which he and the whole country are benefitted. But if a child, on leaving

school, is to go on to a farm, never to look at a book again, and never in any way to make use of his education, his schooling is a gross waste of the money of the public and of the time of the child. As a remedy for this, let us take the analogy of the town-bred artisan, and create a system of agricultural senior scholarships to be held by farm boys under the superintendence of a thoroughly qualified teacher who knows the practice as well as the theory of scientific farming. There may be either teaching centres where the farm lads would be collected to meet the teachers, or the teachers may go on to the farms; or the one plan may be adopted for one period of the year and the other at another period; or there may be grouped classes under instruction for weeks together, when the lads are least required on the farms. The method of instruction will vary, but the principle of continuing the Nature Study of school for the farm and in the field, (as for the apprentice, his mechanical training is continued in the polytechnic), will be maintained, in spite of the difficulties which the differences in its application readily suggest.

It is obvious that the success of any such scheme as this depends upon its organisation by the County Council as the educational authority by whom it is instituted, and upon the co-operation of the farmers, whose convenience must be consulted, and who certainly cannot be expected to pay a full wage to a lad who is not giving full time. As things are now, such a scheme of agricultural scholarships cannot be put into practice successfully, because it is essentially a continuation scheme, built upon an elementary education in which Nature Study has had a very prominent place. Success in agricultural training must, under any imaginable system, depend upon a sound foundation being

laid very early in life, and continued, without any serious break, through all the earlier years of practical work, until learning becomes a second nature and education is accepted as a life-long companion and friend, leading the child and the man on, through various stages of progress and prosperity. It will then be generally recognised that promotion in the business of agriculture depends chiefly upon the power to take advantage of opportunities which it is for the interest of the whole community should be offered to all alike who intend to make agriculture the work and business of their lives, who will bring to it the same sustained energy, and are given for it the same opportunities as are offered to the young mechanic in the most thriving centres of manufacturing industry.

Any comparison between the education of the artisan and that of the farm labourer would be incomplete without some reference to the necessity of easy access to the raw material in each case. Land is as necessary to the labourer as cloth to the tailor and leather to the shoemaker, and no scheme of education for labourers or for small farmers can have its full beneficial results until the purchase, as well as the hire, of land is made far more easy than it now is in many parts of England.

In conclusion, there is one point which should never be forgotten. Agricultural education among small farmers and labourers will prepare the way for agricultural co-operation, which has done such wonders on the Continent and in Ireland, and is destined, in the hands of those who are capable of adapting the co-operative principle to the circumstances and conditions of the English farmer, to be one of the most invigorating elements in the agricultural prosperity, for which we are all of us earnestly looking.

PRACTICAL SCHOOLS OF AGRICULTURE

(*écoles pratiques d'agriculture*),

BY

HENRY GROSJEAN,

Inspector-General of Agriculture in France.

Character of the Practical Schools.

The Practical Schools of Agriculture are, as their names indicate, essentially *professional* schools. They are intended for young lads who have had a good primary education, and who wish to obtain a thorough agricultural training, theoretical as well as practical.

In regard to the grade of instruction, these schools stand midway between the *National* and the *Farm Schools*. Taking the National School, for instance, to represent secondary agricultural education, and the Farm School primary, the Practical School constitutes the higher primary school of agriculture. There is a similar difference between the types of schools in the amount of practical instruction. At the National School theoretical instruction predominates; at the Farm School the instruction is almost exclusively practical; at the Practical School the two forms of instruction are equally divided.

Necessity of the Practical Schools.

These latter schools fill an important gap, and supply a want that has been felt for many years. In the interest of the *small cultivator*, institutions were needed in which lads could quickly acquire such theoretical and practical knowledge as is indispensable to the agricultural career. The large farmer had the National School for his son; the labourer had the Farm School. But the Farm School was no longer sufficient for the requirements of the small cultivator, who composes the bulk of the agricultural population of the country. The Farm School still has its uses, but the scientific instruction there, owing to the short time devoted to it, became inadequate for modern needs. The new instruction, moreover, had to be adapted to the requirements of pupils, usually from 13 to 16 years of age, directly when they leave the primary or higher primary school, while their minds are fresh and alert, instead of being designed for young men, close upon 20 years of age, who have, for the most part, abandoned study and are anxious to learn or continue a trade. M. Tisserand, when he was Inspector-General of Agriculture, solved the problem very successfully by the creation of the *Practical School*, which, in a most sensible manner, alternates practical exercises with class lessons.

Number of Schools.

The results were soon apparent. Since July 30th, 1875 (the date of the Law organising this branch of education), 50 of these Practical Schools have been established, and others are in course of formation, so that, within a few years, each Department will probably be in possession of one of these useful institutions.

How Established.

The Practical Schools are not, like the National Schools, the property of the State : they belong either to a Department or to a private individual, who places them, subject to certain conditions, at the disposal of the State, which then provides the agricultural instruction. In short, they owe their existence to two distinct sources : the proprietor, whoever he may be (a landowner, a farmer with a long lease, a Commune or a Department), who furnishes the land, buildings and equipment ; and the State, which provides the salaries of the staff and the expenses incidental to the instruction.

Under special circumstances, however—in the case, for instance, of a Department with limited means—the State can share in the expenses of establishment and equipment ; but this has always been regarded as exceptional. It may be observed, too, that the proprietor who allows his property to be used for the establishment of a school often has recourse to the aid of the Department towards the erection or equipment of the buildings and the purchase of the teaching material. The proprietor advances the money, and the Department repays him by annual instalments.

Instruction Given.

The instruction given in these institutions necessarily varies according to the special requirements of different districts. The Practical Schools, therefore, enjoy considerable flexibility in their procedure, which enables them to specialise and to adapt themselves to all agricultural needs. They are thus specially directed, according to circumstances, towards viticulture, horticulture, dairying, irrigation, and so forth.

Estate Annexed to a School.

The extent of the estate attached to the school varies also according to the locality, the proximity of towns, the character of the agricultural industry of the district, etc. This explains why some schools have an estate of from 450 acres to nearly 800 acres, while others have only from about 7 to 25 acres. Usually a fair average estate will be 80 acres.

The estate ought, of course, to be thoroughly satisfactory from the point of view of health. It ought to be within easy reach of a railway station, and in a neighbourhood with sufficient resources to enable the school to be worked efficiently. The buildings and the land under cultivation ought to be in accord with the average agricultural conditions of the district, the land being, as far as possible, comprised in a single property and contiguous to the school. The whole school should present such a character that it may be taken as a model.

Distribution of the Schools.

It has been previously mentioned that there are 50 Practical Schools in operation to-day. The following table gives the Departments in which they are distributed, as well as certain supplementary information :—

Departments.	Practical Schools.	Post Towns.	Age of Admission.	Duration of Course.
Algérie	Rouiba	Rouiba	14 à 18	3
	Philippeville	Philippeville	13 à 18	3
Aisne	Delhomme	Crézancy	14 à 18	2
Allier	Gennetines	Saint-Ennemond	14 à 18	2
Alpes (Basses-)	Oraison	Oraison	14 à 18	2
Alpes-Maritimes	Antibes	Antibes	14 à 18	3
Ardennes	Rethel	Rethel	14 à 18	2½
Bouches-du-Rhône	Valabre	Gardanne	13 à 18	3
Charente	L'Oisellerie	La Couronne-Angoulême	14 à 17	3
Corse	Ajaccio	Ajaccio		
Côte-d'Or	Beaune	Beaune	13 à 18	3
	Châtillon-sur-Seine	Châtillon-sur-Seine	14 à 18	3
Creuse	Les Granges	Crocq	14 à 21	2
	Genouillat	Genouillat	14 à 18	2
Eure	Le Neubourg	Le Neubourg	13 à 18	3
Finistère	Lézardeau	Quimperlé	14 à 16	2
Garonne (Haute-)	Ondes	Ondes	13 à 18	2
Gironde	La Réole	La Réole	14 à 18	2
Ille-et-Vilaine	Les Trois-Croix	Rennes	13 à 18	2
Indre	Clion	Clion	14 à 20	
Landes	Saint-Sever	Saint-Sever	14 à 20	2
Loiret	Le Chesnoy	Montargis	14 à 18	2
Loire-Inférieure	Grandjouan	Nozay	14 à 19	2
Lot-et-Garonne	Saint-Pau	Sos	13 à 18	3
Manche	Coigny	Carentan	14 à 20	2
Marne (Haute-)	Saint-Bon	Blaise	15	2
Mayenne	Beauchêne	Mayenne	14 à 18	2
Meurthe-et-Moselle	Mathieu de Dombasle	Nancy	15	2
Morbihan	Kersabiec	Port-Louis	14 à 18	2
Nièvre	Corbigny	Corbigny	14 à 18	2
Nord	Wagnonville	Douai	13 à 18	2½
Pas-de-Calais	Berthonval	Mont-Saint-Eloi	13 à 18	3
Pyrénées (Hautes-)	Villembits	Trie	14 à 18	2
Rhône	Ecully	Ecully	13 à 18	3
Saône (Haute-)	Saint-Remy	Amance	15	2½
Saône-et-Loire	Fontaines	Fontaines	13 à 18	2
Somme	Le Paraclet	Boves	13 à 18	3
Var	Hyères	Hyères	14 à 18	3
Vaucluse	Avignon	Avignon	14 à 18	3
Vendée	Pétré	Sainte-Gemme-la-Plaine	13 à 20	2
Vosges	Claude des Vosges	Saulxures-sur-Moselotte	12 à 18	2
Yonne	La Brosse	Auxerre	14 à 18	2

The special Schools of Mamirolle (Doubs), Sartilly (Manche), Descomtes (Meuse), Coëtlogon (Ille-et Vilaine), Kerliver (Finistère), Poligny (Jura), Monastier (Haute-Loire), Gambais (Seine-et-Oise), Anctoville (Calvados), are not included.

This table shows that the Practical Schools are chiefly found in the Departments of the East and North, whereas the Farm Schools which still exist are principally in the South and in Central France. There has been a kind of natural selection between Departments as to which of the two types of School should be adopted or preserved. In the Departments where land is cultivated under the association or "métayage"* system, the Farm School continues. In those, on the contrary, in which the cultivation is "individualised (either owner cultivating by himself or tenant-farmer), the Practical School has taken its place. In districts where responsibility and needs are greater there is a corresponding development of specialised or technical instruction. This distinction evidently cannot hold good always, but it nevertheless serves, in my opinion, as a valuable indication of the relationship which exists between the rural economy of a district and the character of the technical education required.†

Staff.

The Staff may vary in different institutions, but it generally comprises :—

A Director (who may also be one of the Professors).

A Professor of Agriculture,

A Professor of Physics and Chemistry,

A Professor of Natural Science,

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* The "métayage" is an *association* between the owner and the tenant ("métayer"), under which the owner provides the capital, and the tenant his labour; the produce being divided between both of the parties.

† Fifty years ago there were 75 Farm Schools; to-day there are not more than 12.

A Teacher who superintends and is responsible for the supplementary primary instruction.

A Veterinary Surgeon, Professor of Zootechny, a head of the practical agricultural department, and another of the practical horticultural department.

A Superintendent Instructor in Military Drill (or another Superintendent Teacher called Assistant).

The Directors and Professors of these schools are recruited after a competitive examination from amongst the graduates of the National Agronomic Institute or the National Schools of Agriculture, and fulfilling certain conditions. As to the Superintendent Teachers, they should be furnished with the higher diploma of primary instruction. The control and inspection of these establishments is undertaken by the Inspectors of Agriculture.

Origin of the Pupils.

The great majority of the pupils who attend the Practical Schools come from families connected with the land. It should be mentioned, however, that when a school is first started one finds a certain proportion of the pupils are the sons of clerks, teachers, commercial men, etc.; but as soon as a school begins to work regularly, and its success is assured, there is a steady increase in the number of pupils of the agricultural classes.

Admission.

Before entering the Practical School candidates for admission are examined in the French language, arithmetic, the history and geography of France. Their preparation is

becoming more and more satisfactory, and most of the candidates now hold the certificate of primary instruction. A certain number of scholarships are placed at their disposal by the State (on average four for each school and for each year of instruction), by the Departments and sometimes by the towns.

"Regime."

The Practical Schools are generally Boarding Schools. Those close to towns occasionally have some half-boarders and day scholars.

Fees.

The fees for boarding vary according to the locality, from £16 to £24 per annum, the average being from £18 to £20 (fees which, it need hardly be said, are extremely low); half-boarders pay from £8 to £10 a year; day scholars, £2 usually. The Director receives these fees: in addition, he has a salary from the State, and disposes of the more or less remunerative work of the pupils.

Age.

On the average, the pupils enter the School in their fifteenth year.

Course of Studies.

The course of instruction at the Practical Schools is one of two or three years, but there are more schools with a two years' than a three years' course. Although it is clear that more thorough instruction can be given in three than in two years, it is no less certain that the parents of the lads—who are, for the most, of a humble station in life—dislike the

idea of losing their sons for three years, just at the time when they can be of great assistance to them. Hence arises the necessity of curtailing the duration of the course. Some special schools (the dairy schools, for instance) only provide instruction for a year ; on the other hand, three schools cover two and a-half years' study. This question of the duration of the course is, before everything, a question of locality.

Programme of Studies.

The programme of studies varies according to the character of the schools, but it comprises, as the basis of the instruction, the following subjects, which can be more or less developed to meet the particular requirements of each school :—

Moral and civic instruction, French language, arithmetic, geometry, surveying, land-measuring, levelling and drawing to scale ; agricultural geography, physics and meteorology, chemistry applied to agriculture and agricultural technology, natural science (hygiene, zoology, entomology, botany, the diseases of plants, geology), general agriculture and special cultures, agricultural engineering, rural economy and laws, zootechny and sanitary regulations, horticulture and fruit culture, farm accounts, military drill.

The instruction in class is supplemented by very frequent practical exercises on the farm, in the demonstration plots and laboratories, as well as by numerous excursions. The Ministry of Agriculture, moreover, takes especial care that the class teaching is rendered as objective and practical as possible.

The "Half-time System."

The division of time between theoretical lessons and practical work is the essential feature of the Practical School. In this type of school the "*half-time system*" is in use : half

the time is devoted to the theoretical lessons, and the other half to practical work. Then, as M. Tisserand observes, "there is neither satiety for the mind, nor fatigue for the body." One form of activity relieves another, and over-pressure is impossible. The intelligence of the pupils is harmoniously developed at the same time that their physical strength is increased, and the result in both these respects could not be more convincing. The physical and intellectual transformation which a young man has undergone by the end of his second year is often remarkable.

Time Table.

This division of work is faithfully reproduced in the following time table from a school with a two years' course (Pétré, in Vendée) :—

TIME TABLE.		Summer. From April 1st to October 1st.	Winter. From October 1st to April 1st
First Year.	Second Year.		
Rising.		5 to 5.30	6 to 6.30
Study.		5.30 to 7	6.30 to 7.30
Breakfast.		7 to 7.30	7.30 to 8
Class.	Practical Work.	7.30 to 9	8 to 9.30
Study.	id.	9 to 10.30	9.30 to 10.30
Class.	id.	10.30 to 12	10.30 to 12
Lunch and Recreation.		12 to 1	12 to 1
Practical Work.	Study.	1 to 2.30	1 to 2.30
id.	Class.	2.30 to 4	2.30 to 4
Tea.		4 to 4.30	4 to 4.30
id.	Study.	4.30 to 5.30	4.30 to 5.30
id.	Class.	5.30 to 7	5.30 to 7
Dinner and Recreation.		7 to 8	7 to 8
Study.		8 to 9	8 to 9
Going to Bed.		9	9

Examinations.

Further, the pupils are regularly kept up to the mark, as at the Agronomic Institute and the National Schools, by special theoretical and practical examinations which are held every week, and by the general examinations at the end of each course.

Diploma.

On the conclusion of their studies the pupils who are worthy of it receive a " Certificate of Instruction," awarded in the name of the Minister of Agriculture, after an examination which recapitulates the whole course before the " Committee of Superintendence and Improvement " of the school. This diploma counts for a certain number of marks in the competition for admission to the National Schools of Agriculture, in the case of those who desire to prolong their technical training.

Cost of Establishment and Maintenance.

The cost of establishing a school with a two years' course (school buildings and equipment) may be estimated, according to circumstances, at from £2,000 to £4,000.

The expenses of maintaining a school, which are defrayed by the State, include the salaries of the Staff, a certain number of scholarships or bursaries, and a fixed sum (from £48 to £60) for teaching material. The total annual cost of maintenance varies between £760 and £1,000.

Total Enrolment of Pupils.

The total enrolment of pupils in our Practical Schools (including those with a course of one year) amounts to about 1,500, which gives an average of 30 pupils to each establishment. The highest enrolment at a single school is 90 pupils, and the lowest (at a dairy school of one year) 12 pupils.

Since the creation of the Practical Schools about two-thirds of the pupils in attendance have secured diplomas. That is, indeed, an excellent proportion, which would be still larger if a certain number of parents were not compelled to withdraw their sons before the completion of their course, to employ them at their own farm or gardens. This fact—rare in schools with the two years' course—is more frequent in those with three years, which justifies the previous statement as to the length of the courses.

Future Career of Pupils.

The great majority of those who pass through the Practical Schools remain faithful to an agricultural career. A certain number of them prolong their studies and enter the National Schools, but most of them accomplish the aim of the legislator by returning to the land, and, either at their own houses or with some farmer who employs them, put into practice the good methods which have been taught to them at the school. It is in this direction that the influence of the Practical School is principally felt far more than in the immediate neighbourhood of the school since no one is a prophet in his own country. These establishments, moreover, are of too recent an origin to be well known to the generality of cultivators, and, consequently, to be appreciated by them as they deserve to be.

But, with this reservation, one can say that the results attained by the Practical Schools have justified the anticipations of their founders, and that they are quite encouraging in regard to the future. It could not be otherwise, for this institution does supply a definite want: it has been well termed "the *school of the peasant.*" The education there is given in the most carefully-balanced manner, and, owing to the system of equally dividing the practical work and theoretical lessons, the pupil, as though at some game, faces difficulties which, under another system, would be insurmountable. It is right to add, too, that from another point of view, these schools, owing to the simultaneous co-operation of several initiatives, are *little expensive.* They furnish a striking instance of what may be all at once effected by the division of labour and the union of several actions in the accomplishment of a given end.

The value of these schools is no longer contested, and no year passes without some foreign Government sending representatives to inquire into their organisation and methods of instruction. In Switzerland, Italy, Belgium, Portugal, etc., similar schools have been established, and I have noticed with pleasure that one of the first intentions of the newly-created Board of Agriculture in England had been to introduce technical agricultural education, upon the same principles as those that have guaranteed the success of the Practical Schools of Agriculture.

Improvements to be Realised: The New Decree.

Every human institution, however, is capable of improvement. The past twenty years, during which most of the Practical Schools have been in operation, have shown that certain reforms ought to be carried out. These reforms are indicated in a special Report of the Minister of Agriculture to the President of the Republic, and embodied in the accompanying decree, documents to which due consideration has been given in the preparation of the paper which I have the honour to submit to the Conference at Gloucester.

DECREE.

I.—Organisation.

Article 1.—The Practical Schools of Agriculture, established in accordance with the law of July 30th, 1875, are subject to the regulations and conditions herein set forth.

Article 2.—A Practical School of Agriculture can only be established on a property of which the freehold has been given to the State, or of which the usufruct has been granted for a period of 18 years at least, including the school and farm buildings, deemed to be necessary by the Minister of Agriculture.

The expenses of maintaining the school equipment and the school and farm buildings, in the case of those establishments of which the usufruct only is granted to the State by a Department or Commune, remain at the charge of that Department or Commune.

ARTICLE 3.—The property ought to be thoroughly satisfactory from the hygienic point of view. It ought to be near a railway station and in a district with adequate resources for the effective development of the school.

ARTICLE 4.—The buildings and land under cultivation ought to correspond with those usually found in the neighbourhood. The land ought, so far as possible, to be comprised in a single property and contiguous to the school.

ARTICLE 5.—No school may be opened unless the school and farm buildings are organised or adapted in accordance with the plans determined by the Minister of Agriculture, and after the Minister's deputy has certified them.

ARTICLE 6.—The Practical School ought in its entirety to be of such a character that it may serve as a model. A scheme of cultivation, drawn up by the Director in concert with the Committee of Superintendence and Improvement, must be submitted for the approval of the Minister.

ARTICLE 7.—Each school ought to comprise a field for instruction and experimental plots, in which practical demonstrations are to be arranged and research work be carried on in collaboration with the professors.

ARTICLE 8.—Practical Schools are not necessarily of the same type. Their organisation in regard to the administrative and teaching staff, as well as the programme of instruction, varies according to their importance and the special needs of the neighbourhood. It is determined by the Minister of Agriculture.

II.—Staff.

Article 9.—The Staff of the Practical Schools of Agriculture is appointed by the Minister of Agriculture.

It incudes :—

(1) A Director, whose authority extends over the whole.

(2) One or more Professors.

(3) One or two teachers, the first of whom is entitled, the master superintendent, in charge of the classes in primary instruction ; the second, the assistant superintendent.

(4) A diplomated Veterinary Surgeon.

(5) One or more heads of the practical work.

Article 10.—Every candidate for an appointment at the Practical Schools must furnish a medical certificate that he is suffering from no infectious disease.

Article 11.—The Directors are selected from amongst the candidates found to be eligible after an examination of their qualifications.

For admission to this examination the candidates must (*a*) be at least 30 years of age, (*b*) have satisfied the law as to military service, (*c*) possess the diploma of the National Agronomic Institute or of the National Schools of Agriculture, (*d*) have been for five years at least engaged in the agricultural education or have practised agriculture with success and distinction either as farmer or landowner for at least 10 years.

ARTICLE 12.—An election takes place whenever a Directorship is vacant or a new Directorship has to be created. Notice of this is given two months in advance. Candidates must forward to the Minister of Agriculture, 25 days before the date fixed for the election, a detailed and exact statement of the qualifications, diploma and certificates required by the preceding Article. In this statement the candidate must set forth his titles, previous work, etc., and, if he should be the farmer of the estate, the resources at his disposal.

The Minister of Agriculture draws up the list of the candidates whom he has admitted as competitors.

The candidates must present themselves before a special administrative commission, composed as follows :—

The Director and Sub-Director of Agriculture, three Inspectors General or Inspectors of Agriculture, and the Chief of the Department of Agricultural Education.

This commission compiles a list, in order of merit, of the three first candidates recognised as eligible, and submits it to the Minister, who selects the new Director from them.

ARTICLE 13.—The professors of agricultural science and the professors of physical and natural science are appointed after three different tests, namely : (*a*) a special technical examination ; (*b*) a pedagogic training of one year under conditions determined by the Minister ; and (*c*) a competitive examination for the certificate of fitness to give agricultural education in Practical Schools of Agriculture.

ARTICLE 14.—To be admitted to the special technical examination candidates must (*a*) have satisfied the require-

ments of the law as to military service and be at least 24 years old; (*b*) possess the diploma of Agricultural Engineer or the diploma of the National Schools of Agriculture; and (*c*) have resided for a year at least on a farm.

The list of candidates admitted to this examination is determined by the Minister.

The special technical examination is held at Paris before a jury composed as follows: An Inspector-General of Agriculture, an Inspector of Agriculture, a Professor of Agricultural Science, a Professor of Zootechny, a Professor of Physical Science, a Professor of Natural Science, and a Director of a Practical School of Agriculture.

ARTICLE 15.—The programme of the special technical examination, which includes written, oral and practical questions, is regulated by a decree of the Minister. It is composed of two distinct divisions, one for candidates for the chairs of agricultural science, the other for those for the chairs of physical and natural science.

On the conclusion of this examination the jury draws up a list, in order of merit, of the candidates certified as eligible for pedagogic training.

After the candidates have passed through the year's pedagogic training, they will be allowed to present themselves for the certificate of fitness to give agricultural education at a Practical School of Agriculture. The certificates will be awarded by a jury similar to the one for the special technical examination. Only those candidates who hold this certificate can be appointed professors.

ARTICLE 16.—The heads of the practical work are

appointed on the presentation of the Director of the school. They are selected from amongst the candidates provided with a certificate of instruction from a State agricultural establishment and after a special examination.

ARTICLE 17.—The veterinary surgeon, who must hold a diploma and is responsible for the classes on the structure and hygiene of domestic animals, is appointed upon a favourable report from the Prefect and the District Inspector of Agriculture.

ARTICLE 18.—The superintendent masters are selected from amongst the teachers who hold the higher certificate of Primary Instruction and the Certificate of Pedagogy, and have taught for three years at least in the State public schools.

ARTICLE 19.—The directors, professors, heads of practical work and superintendent masters must give the whole of their time to the school. They are forbidden to engage in any other form of remunerative employment.

ARTICLE 20.—The salaries and allowances of the staff of the practical schools are included in the State Budget, and are fixed upon the following scale :—

Functions.	4th Class	3rd Class	2nd Class	1st Class	Exceptional Class
	£	£	£	£	£
Director	160	180	200	220	240
Professor	108	120	132	144	160
Superintendent Master ...	72	84	96	108	120
Assistant Superintendent ...	56	64	72	80	88
Head of the Practical Work	72	84	96	108	120
Veterinary Surgeon	24	28	32	36	40

The allowance to the veterinary surgeon is not subject to the reductions prescribed by the law in regard to civil pensions.

The preceding table only applies to those officials who are appointed under the conditions laid down in the Decree.

The appointment at first begins with the salary of the last class, unless the candidate appointed is already on the staff of the agricultural education department and enjoys a salary above that of this class.

The salary of the exceptional class is only granted to those who have served for 25 years, of which five at least have been passed in the first class.

Promotion is from one class to the class immediately above it. Those only who have served for three years in a class are eligible for promotion.

ARTICLE 21.—The director, superintendent masters, and heads of the practical work have free lodging at the school.

ARTICLE 22.—The establishment receives annually from the State an allowance to cover teaching material expenses. This grant cannot, in any case, amount to more than £60.

Details of the expenditure of this grant are set forth in a special register, checked by the inspector, in which the number of the inventory, if there happens to be one, relating to the expenditure is given.

The Directors must produce the counterfoils and receipts of all monies spent before the Inspector of Agriculture.

ARTICLE 23.—Special grants may be made under exceptional circumstances to schools, whereby the State can share some of the expenses, which, without being indispensable to the estate, may be justified by educational requirements.

In regard to this, the Director forwards an application with a descriptive statement and detailed estimate to the Minister of Agriculture, who, after consulting the Inspector concerned, makes a grant, if there is to be one. When the money has been expended, the Director transmits to the Minister the counterfoils and receipts. The total grant made by the State under this head cannot, in one account, exceed the sum of £48.

III.—STUDENTS.

ARTICLE 24.—Practical schools receive boarders and, in exceptional cases, half-boarders or day pupils, or those who only attend certain classes.

The fees for boarding vary according to the schools. They are fixed by a Ministerial Decree.

These fees include all the cost of maintenance, food, bed, heating, lighting, laundry, infirmary charges and the service of the doctor attached to the school. The medicaments must be paid for by the parents.

All the pupils, whether they hold bursaries or not, are obliged, at their own expense, to provide an outfit, the character of which is determined by the Minister on the advice of the Director.

ARTICLE 25.—All the pupils are subject to the same regulations. The Directors are expressly forbidden to make

any difference in the treatment of the pupils or to charge any higher fees than those fixed by the Decree under which the school was erected.

The State may award bursaries for those pupils whose families are in such poor circumstances as to justify them. These bursaries may be divided, and they may be withdrawn where they are no longer deserved.

No pupil is admitted to a practical school without having successfully passed an examination affording evidence of his capacity and the extent of his previous education, and without a recent medical certificate that he has no infectious disease.

The entrance examinations are held yearly at a date and place fixed by the Minister.

IV.—Miscellaneous.

Article 26.—A delay of five years is allowed for the remodelling, so far as possible, of the existing schools, which do not correspond with the conditions laid down in this Decree, in default of which these establishments will be closed.

Article 27.—Members of the staffs actually engaged at the Practical Schools of Agriculture will remain subject to the rules and regulations in force before the promulgation of the present Decree.

Those who may desire to benefit by the advantages of the present Decree must satisfy the following conditions :—

The Directors must submit to an examination upon titles as provided in Article 12.

The professors will only be compelled to undergo the special examination mentioned in Articles 14 and 15. They will be exempt from the pedagogic training, which will be replaced by the addition of some pedagogic tests to the special examination.

The superintendent masters will benefit by the terms of the present Decree, if they possess the titles required by Article 18.

The heads of the practical work will benefit by the terms of the present Decree after a special examination and on the recommendation of the Director of Agriculture, provided: (*a*) they already belong to the regular staff of the school; (*b*) they conform to the conditions of the present Decree within three years.

The veterinary surgeons, who hold a diploma and are actually engaged, will benefit by the terms of the present Decree upon the advice of the District Inspector.

Article 28.—The conditions laid down in Articles 20, 22 and 23 of the present Decree will be applicable so far as the appropriations will permit.

New Practical Schools of Agriculture cannot be established without a special credit for each of them being inscribed in the Budget of the Ministry of Agriculture, unless the funds resulting from the closing of other schools, or from the savings effected under the whole of this item of expenditure admit of it.

Article 29.—All provisions contrary to the present Decree and contained in former rules and regulations are hereby repealed.

ARTICLE 30.—The Minister of Agriculture is charged with the duty of carrying out the present Decree, so far as it relates to him, which will be published in the *Bulletin des Lois* and in the *Journal Officiel* of the French Republic.

EMILE LOUBET,

By the President of the Republic.

LEON MOUGEOT, Minister of Agriculture.

ROUVIER, Minister of Finance.

Paris, January 19th, 1904.

MONOGRAPHY OF AN "ÉCOLE PRATIQUE."

THE "ALEXANDRE DELHOMME" PRACTICAL SCHOOL OF AGRICULTURE AT CRÉZANCY (AISNE).

By Henry Grosjean.

History of its Creation.

It was to an enlightened philanthropy, twelve years ago, we owed the realisation of a scheme for the establishment of a Practical School of Agriculture in the Department of Aisne. In 1889 Madame Delhomme, the widow of Alexandre Delhomme, offered to give the Department the important farm of Croix-de-Fer, at Crézancy, including the buildings, some 260 acres of land, the stock, agricultural implements, etc., on condition that the Department established an agricultural school there. The Department Council, at its session of April, 1890, accepted this generous offer with gratitude ; the Department adapted or erected the necessary school premises, and by a Ministerial decree of February 26th, 1891, the school was established. It commenced operations the following autumn, and was inaugurated on October 23rd, 1893.

Madame Delhomme, by her offer of the estate of Croix-der-Fer for the purpose of an agricultural school in memory of her husband, was realising a project which he was on the

point of carrying out when his death occurred. It was the intention of M. Delhomme, when he bought the old estate of Croix-de-Fer in 1878, to transform it and convert it into a model farm, which might become an agricultural school afterwards.

The proposed transformation had been radically and largely effected: vast and costly agricultural buildings had replaced the old, decayed erections; valuable stock, in keeping with the stalls they were to occupy, had been selected; while the most improved machinery made the whole estate complete. The cultivation, in turn, underwent a similar transformation, and henceforward M. Delhomme's property became one of the most remarkable of the district. It was on this estate that the generosity of Monsieur and Madame Delhomme enabled the Practical Agricultural School of Aisne to come into existence.

If the estate were well selected, we might say that the Director was equally well chosen. M. Brunel, holding the degree of Engineer in Agriculture, had already given proof of his capacity as Director of the Practical School of the Department of Vosges, and he was highly qualified to undertake the duties of this new post. The long lease he has obtained from the Department has permitted him to continue the improvements already introduced.

Location.

The school is about a quarter of a mile from Crézancy Station, on the line from Chateau-Thierry to Romilly, and about two miles from Mézy (line from Paris to Strasburgh).

Estate.

Roughly, two-thirds of the estate of Croix-de-Fer are formed of tertiary eocene deposits and one-third of quaternary diluvial or alluvial. Coarse chalk is found throughout some 90 acres in the first-named ; the Saint Ouen marl and the Beauchamp sands each are about 40 acres. The soils composed of these different constituents vary considerably in character ; they are loams, clayey-calcareous, clayey, or sandy soils, but, in general, rich enough, especially in potash. The marl at certain points lies sufficiently deep to be extracted ; so it is used with advantage to improve the soil where it is deficient in lime.

The property is divided as follows :—

Arable land	200 acres.
Pasture	30 acres.
Gardens	5 acres.
Woods	20 acres.
Buildings, Yards, etc. ..	2 acres.
Total	257 acres.

On May 1st, 1904, there were 65 acres under wheat, 50 acres under oats ; different leguminous forage plants, 65 acres ; beetroot, 12 acres ; potatoes, 4½ acres. This indicates the extent to which the production of forage is developed at the farm.

Stock.

This development has enabled considerable attention to be paid to stock raising. On the above date the stock

actually comprised 11 horses, 1 bull and 24 cows of the Normandy breed, a flock of sheep of the Charmoise breed, which has become known for its success at exhibitions, and which includes 4 rams, 200 bearing ewes, 150 lambs and mutton sheep ; in addition, there are about 15 Yorkshire pigs and a quantity of poultry. The stock kept on the farm weighs some 770 hundredweight, which gives an average of rather more than 350 lbs. per acre in cultivation. The intensive character of the farming is thus apparent.

Buildings.

Attention has been drawn above to the excellence and costliness of the buildings, and it is evident that they must be regarded as models of expensive farm architecture, and not as specimens of ordinary rural buildings. M. Delhomme, as a refined agriculturist, travelled extensively, principally in Great Britain, and selected the most perfect type of farm buildings. These he imitated at home with admirable taste and finish.

These buildings present a large development, and include some which are very interesting from the educational standpoint: workshops, oven, slaughter-house, cheese dairy, silos, etc. The agricultural equipment, both internal and external, is plentiful and in good condition.

The buildings for the pupils are very spacious as well, and quite come up to the standard which one expects at an institution of this type.

Instruction.

The instruction at Crézancy covers a period of two years. It is carefully supervised by the Director-Professor, aided by a first-rate staff. The present number of pupils is 30, of whom half leave this year; there is accommodation for 40, and this maximum has once been passed. Since its establishment the school has had 171 pupils, 117 of whom received a diploma. The majority have remained faithful to an agricultural career; 87 are actually engaged in agriculture, 5 in horticulture, 5 in dairying, 1 is a veterinary surgeon, and 5 have embarked in the sugar industry. The rest follow various occupations. This clearly proves how much the Department of Aisne required such an institution, and it is not unreasonable to hope that its initial success is a good augury for its future usefulness.

The Right Hon. HENRY HOBHOUSE, M.P. (Chairman of the Somerset Education Committee), said: I am sure it is very gratifying to those of us who some years ago promoted the Agricultural Education Committee, to hear from the lips of the Minister of Agriculture that such a large proportion of our programme had been carried out by the Executive Government of this country. And if the work of that Committee is nearly over, it is because the present Minister of Agriculture and his predecessor, Mr. Hanbury—whose death, I am sure, we all regret—as well as the able persons who have supervised the work of the Education Department in recent years, have recognised the fact which we were not slow to impress upon them in past years, namely, that this work of agricultural education was not work to be promoted by a body of amateurs, with the aid of private subscriptions, but that it was a most important work, deserving the best consideration of the Government Departments and a large expenditure of public funds. I only rise to call attention to one class of institution which I think is almost essential to the proper education of the young farmer and the sons of small farmers, and that is a type of secondary school with what I may term an agricultural or rural bias. I do not mean necessarily an agricultural side, equipped with a school farm; that is not essential. But what I think is essential is that we should have in our rural districts secondary schools that shall give the sons of farmers, and those desirous of becoming farmers, together with the picked sons of our agricultural labourers, a kind of secondary education that shall not unfit them, but rather equip them for, and interest them in, the work of the country around them. I mean such a class of school as used to be known in the directory of the Science and Art Department as

Rural Science Schools. There have been changes—very wholesome and excellent changes—in our Government regulations during the last few years, but I hope these changes will not have the effect of crushing out of existence, or allowing to disappear, this particular type of school. If time served me I could point out how these changes in the regulations do affect this class of school somewhat prejudicially. I want to plead that both Departments should keep their eye on this particular class of school, which is one that requires liberal aid, because the kind of agricultural teaching—not pure science, but science applied to agriculture, and the practical work in the school garden and the workshops which goes hand in hand with theoretical instruction—does require a good deal of aid, because it is a difficult and costly kind of instruction. It is difficult to get teachers who are well up in science who will also take a keen interest in the practical side ; and they require laboratories, land, workshops, etc. In my own county we have found it only possible to carry on a school of this kind efficiently by the County Authority supplementing the Government grants. The Government Inspector comes round from the Board of Education, and very naturally turns his attention to the sciences taught ; but he is apt to require from this class of school almost as high a standard of scientific work, apart from the agricultural subjects, as he does from the purely scientific schools. Now, I want to plead that these requirements should not be enforced, and that these schools should not be prejudiced in that direction, because, owing to the amount of agricultural science they have to teach, and the practical instruction they have to give, they cannot attain as high a standard in pure science as the ordinary schools of science. The difficulty, of course, arises from

there being two Departments in charge of education. I quite understand the claim made by the Earl of Onslow for retaining the educational work of his Department, and there is a good deal to be said for it; but I do sincerely hope that the intention he has expressed so forcibly to-day to co-operate thoroughly with the Education Department will be carried out, especially in dealing with the class of school I have mentioned. We want this kind of school inspected by a man from the Board of Agriculture, or, at any rate, a man who can look at things from an agricultural point of view; and we want him sent down before the grant to be given is assessed. Another point is this: it has been suggested in certain quarters—and it was approved by the majority of the Somerset County Education Committee the other day—that during three of the summer months farmers' sons should be allowed to return to work on the farm without prejudicing the grants given to the secondary schools. I know the difficulty, and the strong objections raised by teachers that any break of this kind in the teaching will interfere with the proper scientific course, and so on. But I do think that something more might be done to persuade farmers of the advantage of a more prolonged period of secondary education for their children, if they were able to give them during the busy months of the year some practical instruction on their own farms.

AFTERNOON SESSION.

On the resumption of the proceedings, Mr. J. C. Medd moved the following Resolution, which was seconded by Mr. Charles Bathurst, and unanimously adopted :—

> "That the most cordial thanks of this Conference be "offered to M. Henry Grosjean, Inspecteur-"Général de l'Agriculture, and to M. Réné "Leblanc, Inspecteur-Général de l'Instruction "Publique in France, for their extremely valuable "papers."

Mr. R. L. MORANT, C.B. (Permanent Secretary to the Board of Education), said: I did not come here to-day with the least intention of speaking. Lord Londonderry (President of the Board of Education) was himself very anxious to have been here and to have said something on the same lines as Lord Onslow. And his Lordship directed me to come, as he could not, merely to assure the Conference in his name of what Lord Onslow has said so wisely and so well, that the two Boards are anxious to co-operate in the most effective and hearty manner possible; and that in the person of the two Presidents they have been doing so for the past twelve months, and hope to do so in the future. So far there has been no difficulty. Each Department has been doing its best, and we are very glad to be able to co-operate under the present arrangement, and we shall endeavour, if possible, to make that co-operation still more close and effective. Therefore I do not intend to detain you for more than a moment, but I should like to refer *en passant* to one or two points that struck me this morning.

The best feature of this morning's Conference, as compared with many Conferences I have attended on educational matters, is that each speaker in his paper made it clear at the beginning what particular grade of instruction he was going to talk about. Generally we have such hopeless confusion in the average speeches. Different grades of schools and different ages of the students to be educated are all mixed together.

But in the title of the first paper to be read this afternoon —" The Education of the Labourer "—I foresee a possible fallacy. I suppose it means a boy who is going to be a labourer ; but it might also mean a person who is a labourer already. I would urge upon the speakers and listeners to keep the two problems distinct in their minds.

Our Department this morning came in for some useful criticism, and no one welcomes it more than we do ; but I think we are very much in the position of the piano player who was hired by some Californian miners to play at a concert. The promoters of the concert said they would have what music they wanted ; but they could not say at all clearly what they wanted, although they knew what they didn't want. So the pianist very thoughtfully put up the following notice : " Please don't shoot the performer, he's doing his best."

Well, we are doing our best. We are very glad to have criticism, but it all depends upon the sort. We want more positive criticism instead of the very negative kind of criticism we get. People very often say, " Don't do this " or " Don't do that," when usually we are not doing it at all

—especially, by the bye, in the "spelling" line; for I may tell Mr. Verney that spelling is not mentioned at all as one of the subjects in the forefront of the Code. So far as I have seen work recently in the elementary schools—where the County Authority do their duty, and the managers look after it—I should think that spelling was confined to teaching the children to *read* well, rather than to to spell correctly words of an abstruse or recondite character; and if Mr. Verney can bring his influence to bear upon his own Councils' schools in the matter, I don't think any difficulty will be put in the way, as far as the Board of Education is concerned, to avoid any extravagant expenditure of time in the teaching of spelling.

We ask you to suggest what is to be done in rural schools; and there, again, it is in the hands of the local authority very much to carry out what they desire. I hope the value of this Conference will be to bring home the fact that the Government has now put the power in the hands of the local authorities to see that that only is done in the schools which is really useful to the needs of the pupils.

But you must remember that education is a very difficult matter. The training of a child's mind is not a thing everybody knows everything about; and sometimes it may be better for the country inhabitants to say what they think they want the product of the school to be, and then leave to those whose business it is to study the training of the child's mind to see how best that can be advanced. There is a great deal of difference between the process and the end in view. It is easy to say "We want more practical agricultural teaching," but I suppose what you really want brought into the school, if you could put it into one point, is what I always

call " instinctive appreciation of the play of cause and effect." The " rule of thumb man," the bugbear of modern scientists, does not trouble to inquire what causes brought about a given effect.

When you say you want the elementary schools to teach more of this subject or more of that, or that the young agricultural labourer should be taught hedging and ditching and so forth at the elementary school, why don't you stop for a moment and think out carefully what you want the product of the school to be, what you want to be attained, what it is you want the school to turn out, and let us know *that*. Remember, there is none too much time in a child's school life to do what ought to be done. What you really want, I think, is to get a child into the instinctive habit of mind, directly he sees anything, of trying to begin to think what different causes are involved ; to realise the great mistake of thinking that only one cause goes to produce a particular effect.

Our object must be to train a child constantly to think out the different causes, and to realise that nothing happens without a cause, or many causes, behind it. This attitude of mind is one of the biggest differences between the civilised and the uncivilised races. The savage, when he sees anything happen, attributes it to the arbitrary whim and dictate of one of his deities, of the forest, of the stream. The attitude of mind that we want to secure is a realisation that there are causes for everything, if only we could find them out ; and we should try and find out as many different causes as we can. If we train our boys to do that, it would be a striking contrast to the mental equipment of the agricultural labourer of fifty years ago.

In advising the Education Department and its officials, please remember not to ask us to do impossibilities; for instance, not to ask us to turn out absolutely excellent agricultural labourers at the age of fifteen. We shall be glad to do all in our power in the direction I have indicated; but bear in mind that the main object is to secure a good training for the young minds concerned, and in later years this can be carried forward in specialised directions. I leave that one point as my main message, as far as our Department is concerned.

THE EDUCATION OF THE LABOURER

BY

Sir Thomas Dyke-Acland, Bart.,

(*Chairman of the Devon Education Committee.*)

Among the many subjects which County Education Authorities have to deal with, probably none is more difficult than the provision of the form of Education best fitted for the Agricultural Labourer. To begin with, it is probably true that not more than one in three (it might not be one in five) of the boys at an ordinary Rural Elementary School are likely to become Agricultural Labourers, because, taking the ordinary Agricultural Labourer's family at an average of five, of which two or three may be boys, it is to be remembered that probably only one of those boys will fill a place similar to that which his father occupies as an Agricultural Labourer.

Consequently the education to be provided in the school attended by those boys must be such as will prepare not only them but also the other children for their paths in life, or for the further instruction that they may be fortunate enough to be able to get, and the labourer's children must make the best of it, as they cannot be specialised.

The home associations of all these children will vary considerably. The period for which it is possible to secure their attendance at school will also vary; and the great variety of the distances of their homes from the schools

makes it necessary to introduce as much elasticity as may be possible, in order to get the best results from those who live near and from those whose homes are far off.

I think it will be generally admitted that the regulations under which these schools have been hitherto carried on have, till very recently, been more adapted to the requirements of urban than of rural children ; whereas, if we are to get the best out of our rural schools, it is of the first importance that we should bear in mind that to attend a school which may be two miles off (or even more) from the home, and those two miles across fields, and up and down muddy and hilly and dark lanes, is a very different thing from attending a school at the most half a mile off, and approached along well-lit and well-paved streets. This consideration has also an extremely important bearing on the difficulty of carrying on Evening Continuation Schools in rural districts.

I am afraid that, with the very best intentions and efforts of the County Authorities, there will always be a very large proportion of rural children for whom no Continuation School can be made available. The same consideration also puts a difficulty in the way of imitating the system which prevails in some of the Swiss Cantons of making the winter the chief time for schooling, and the summer the chief time for out-of-door work. Consequently it seems that we are almost driven back to the consideration solely of what is the best curriculum for such children as are likely to do no more schooling after fourteen years of age. But I think it is obvious that for the welfare of such children we ought to do our utmost to keep them at school as long as possible, and with this view I am inclined to favour the half-time

system, or some approach to it, because everybody knows that as soon as schooling is entirely dropped, the process of forgetting everything that has been learnt there rapidly sets in ; and if it were possible, without disturbing the arrangements of the school, I would even go so far as to favour the continuance of a boy at school, say two days a week, so long as he can by any means be prevailed upon to make such attendances.

We must remember that the boy who is going to be an agricultural labourer begins to earn wages at the earliest possible moment, and consequently, in order to induce him to continue to attend school after he is by law exempt, we must make up to him or to his parents for the loss of wages on such days as he goes to his schooling ; and I would venture, therefore, to suggest a system of scholarships being inaugurated which would enable a boy to earn, by regularity and good conduct, during his last year, or even during his last two years, an Exhibition which would consist of money payable for such days as he continues to attend school after his period of exemption, till the age of fifteen or sixteen, such attendances being limited to two days a week, and the payment of the Exhibition being conditional on regularity.

I think it would be found that both the employers and the parents would readily avail themselves of that means of continuing to develop the intelligence of a boy at a most important period of his education, and I venture to think that it might be just possible for County Committees so to arrange their schools that, with the aid of bicycles, such boys might form classes at the larger rural schools where the

more numerous staff would render the inconvenience of varying numbers less detrimental to the school work ; but, in order to be widely useful, these classes must be day (not evening) classes.

I am sure that I need not say anything about the great importance of Evening Continuation Schools being insisted upon wherever circumstances render them possible. I should like, however, here to enter a protest against the practice of allowing children to go to school before they are four years old. If such prohibition tends to keep the mothers at home, so much the better for all concerned—husbands, mothers and children alike—the practice of the mother being allowed to work in the fields is detrimental to her, to her children, to her husband, and to their property. It also tends to lower agricultural wages, the lowness of which in many districts is still a very needless and very serious calamity—one of the main causes, in my belief, of the exodus to towns.

If the considerations above alluded to are borne in mind, it becomes evident that we have only the years from, at the earliest, the fourth or fifth birthday to the fourteenth, at the outside, during which we can train the minds of children who are to become agricultural labourers.

What ought we to aim at during those nine or ten years ?

I suppose, under the present circumstances, we must admit that we shall not have many promising boys (as they are called) to deal with—that is to say, I suppose we must admit (or, rather, take for granted) that as things are at present, the brightest and most teachable boys in the rural schools are not likely to remain in the rural districts as agricultural labourers. If they do remain in the agricultural

districts at all, it will be as artisans ; and therefore we must eliminate them from our purview to-day. I think we must also take for granted that for the next few years, at any rate, the future labourers will come from the families of present labourers, and consequently, in many instances, from not the most intelligent amongst the parents, though I am glad to know of many bright exceptions amongst agricultural labourers with whom I am acquainted.

We have, then, to provide for mediocre children coming from uneducated homes and very illiterate parents. Their future is to be one in which their employers will require intelligent, observant, upright and teachable servants. We must do our best to render them also happy and contented, though not unenterprising. People say that the labourer's life is dull and monotonous, and devoid of stimulus ; but I cannot believe that it is impossible to make a man enjoy even ploughing on a cold, clay farm on a foggy November evening more than doing one mechanical operation day after day in a steamy factory and bad air. The ploughman has at least his horses for companions, to say nothing of seagulls, rooks and other things in which he might have been taught to take interest ; and at least he has the pleasure of exercising the skill which is required to plough a straight and well-laid furrow. No one can speak of a waggoner's or a shepherd's life as monotonous or devoid of stimulus, and even the turnip-hoeing and mangel-picking are done in company and in the fresh air. But what we have to do is to prepare the lad for taking intelligent pleasure in his work and in the circumstances attending it. In my belief, the subjects which I will presently enumerate are those to which we had better give most attention, and for the sake of

them, for my own part, I should be inclined to omit some of the subjects which it is at present occasionally attempted to teach in rural schools. I think the most important of all is reading, then writing, and, thirdly, arithmetic. In these each boy ought to be thoroughly grounded before anything else is even attempted. Next to these I think the power of accurate measuring — whether it be mensuration or measuring of a simpler kind—but accuracy in that kind of work is of the first importance to an employer. Next to that I think the most useful subject in which they can be trained, by which their interests can be excited and their intelligence developed, is in such elements of physics as can be illustrated from their daily life. There is no reason why a boy should not be given in the elementary school sufficient instruction in the first principles of mechanics and hydrostatics, to make him understand such forces as the lever, the wedge and the screw, and the use of the pump; but first of all he *must* learn to read and write decently.

It may seem strange, but I am prepared to say that even by labourers—who are in other ways intelligent—you may see the stupidest mistakes made in such matters as these. Again, a boy may be taught at school a good deal that is useful for him to know about the nature of different plants and some elements of the general principles of botany, but this must be merely by means of object-lessons. It is nonsense to talk of teaching Science to children in elementary schools below the age of fourteen. What we have got to do at school is to teach the children to learn; and the art of doing that seems to me to depend on the selection of such subjects only as may be thoroughly dealt with for that purpose. The special cultivation of the habit of observation is very much

more needed in rural districts than in towns, where everyday life constantly stimulates it. I would urge definite means being adopted for this purpose—such as taking boys out for walks during school hours, and making them write an account of what they saw on the way as soon as they return. A half-hour's walk and then ten minutes' writing would not be waste of time. There is, I think, no doubt, that by good organisation itinerant experts might be employed to stimulate the interest and keep up the standard of teaching in such subjects as Mechanics, Hydrostatics, Entomology, Botany, and I think also such subjects as Bee-keeping, Pruning and Budding, and other gardening operations may sometimes be beneficially introduced. I may be considered thoroughly reactionary, but I must confess that to my mind, the time now expended in Geography and History beyond the most elementary stages is almost wasted, because what we ought to cultivate is not the accumulation of facts, the retention of which is very doubtful, but rather a power of acquiring information, and of habitual and accurate observation.

Moreover, I do not believe that it is worth while to waste any of the precious years during which we have the children under our care in teaching gardening to children whose parents have a garden at their door which they are constantly engaged in tilling in their spare hours. The children take in the ordinary processes of gardening "through the pores." But that opinion is by no means inconsistent with the suggestions made above, that itinerant teachers may give very useful lessons in special things, such as Budding and Pruning. And I should not be averse to the maintenance of school gardens, provided that the boys can be induced to work in them without sacrificing any of the time which ought to be

spent in school, and this in many cases it will be found quite easy to do.

I have not, in this paper, said a word about girls, but I should like to add that I think no instruction is more productive, and of lasting benefit, especially to future generations of labourers, than the instruction which can be given to the higher standards of girls in Cookery. It is greatly appreciated by the parents ; the teachers find it to be of the utmost value as a means of instruction and training, and it frequently adds considerably to the comfort of the home.

If I may venture to make one more observation not immediately relevant to the instruction, I should like to add that I think the Local Authorities would be wise in endeavouring to discourage the establishment, and discontinuing the maintenance, of the very small parochial schools wherever this may be possible, although I admit in some cases these are a lamentable necessity. For I am convinced that economy and efficiency can be greatly promoted by concentrating in large schools as many children as possible. School vans have been used for this purpose in various parts of the West of England, and are now used under the Devon Authority. They possess two different advantages. They render possible the concentration above alluded to, with the result of larger staff, and consequently better organisation of the schools; and they bring the children that come in them to school with unexhausted bodies and dry feet and clothes; and large schools well staffed are better for teachers and children alike.

May I add, in conclusion, that it is a matter of the deepest regret to myself that I am unable to be present to listen and to learn from the discussion on the points on which I have dealt ?

MR. GEORGE LAMBERT, M.P., said: I am very sorry that I have to take the place of Sir John Cockburn. I would have been very glad if he could have given us the benefit of his experience in the Australian Colonies. Unfortunately, however, he is unable to be present. He is engaged in a political contest, and if you were as much engaged in politics as I am you would know there is no peace for the politician this side of the grave.

Those of you who are engaged in agriculture will agree with me that one great need we have in the rural districts at the present time is a sufficient quantity of efficient labour. We feel it in Devonshire. I have no doubt you do in Gloucestershire; and what we want to find out if possible is the very best means of educating a child to become proficient in his avocation upon the land.

At the present moment I do not think that the system in vogue succeeds. I do not think that after a child leaves a rural school—say at the age of fourteen years—he has learnt much which will be of service to him in pursuing his avocation as a labourer. I tell you frankly in my opinion it is not so much a question of the wages that we pay as it is a question of the efficient work we require. That is extremely important. In fact, I believe that in almost every industry people want the very best work performed, and they regard as secondary the wages they have to pay for it.

It seems to me that we could in our rural schools enable the labourer's son to take an intelligent interest in that which goes on around him—at any rate, such instruction would be quite as well as many of the subjects which are habitually taught to him at the present moment. We know

what a jumble goes on in a rural school. To me it is perfectly extraordinary that the child remembers anything. I remember seeing the other day in a paper that a boy of about twelve years old was asked to write an essay on some English monarch. He chose—perhaps naturally enough—Henry VIII., and the character of the monarch was as follows :—" Henry was a very good king. He liked plenty of money ; he had plenty of wives ; and he died of ulcers in the legs " ! That is a kind of instruction which would not be, at any rate, of great value to the agricultural labourer's son in carrying out his work upon the farm.

Now, farmers, as we all know, have an inveterate dislike—I won't say they have an inveterate dislike—but that none of them welcome education ; but I may say that farmers as a rule are not ardent educationists.

Is it to be wondered at ? The farmer has to pay the rates to maintain schools, subject to Government grants, and he sees that the money he pays in rates is not put to a useful purpose as regards the cultivation of the soil. In reality the money is used practically to fill up the towns instead of turning out proficient agricultural labour. New, gentlemen, it seems to me that we can alter that in the schools ; but there is one thing, after all, which is required—and which will be required if we are radically to alter our present system of education—and that is, that we must train teachers to carry out those methods to which I refer. That at the present time, I think, is our most urgent necessity. You go into a rural school at the present moment, and take a teacher. I don't blame the teachers. Far from it : they are teaching what

they have been taught to teach, and we have to teach them to teach something else. But you take a teacher at the present time. You won't be able to discover that he has much knowledge of Nature Study or plant life, or, possibly, domestic economy, or all the hundred and one things which go to make up the labourer's life, and which make up the small farmer's life. I cordially agree with the speaker who said just now that it is essential and that it ought to be the duty of education to enable a labourer to become a small farmer. That is excellent. Every man, if he wants to get on, must have some ambition in life; and therefore I would most certainly educate the labourer's son so as to enable him to become a small farmer, and also to give him the opportunity of becoming a successful large farmer some day.

We had a very excellent example just now. (I am speaking without the notice which has been given to other speakers, but I should like to refer to what has been done in Ireland.) I am a Member of Parliament, and I know the Irish Members come to the House of Commons and represent Ireland as the most woe-begone and down-trodden country; but it seems to me that their methods for instilling practical agricultural education are much superior to ours. I notice that the Irish Board of Agriculture has larger sums at its disposal than the English. (Lord Monteagle: "What about the local authorities?") I am coming to that in a moment. Lord Monteagle very properly reminds me of the local authorities. The local authorities have a good deal of money at their disposal; but how was it given to them? It was, if I may use the term, flung at their heads. We had thousands of pounds in Devonshire which we did not know what to do

with. I do not hesitate to tell you that in Devonshire we wasted a considerable sum of the money. Why ? Because we had no preparation for it. In Ireland they have done quite differently. The Central Department has urged upon the local authorities there, or shown the local authorities how to go to work. We have never had that in England. Our Board of Agriculture—and I say it with the greatest possible deference to the Earl of Onslow, who has so ably represented that Department here to-day—does not direct local opinion ; it only encourages what efforts have already been put forth. Why cannot we have in England the same as in Ireland in this respect ? If you take the English counties, if you take Gloucestershire, Devonshire or any other county, you will find that the system of agricultural education is a good deal different. Why may not some person—say a Board of Agriculture representative—go to each county, take out what is best in one county and carry it on to the next for the benefit of that county ? That is what has been done in Ireland. Why cannot it be done in England ? May I be allowed to congratulate the conveners of this Conference that they have done a great work this day for the cause of agriculture ?

What we want to do, after all, is to increase our natural wealth by increasing the productive power of the soil ; and I sincerely hope that this Conference will achieve much in that direction.

A RURAL ELEMENTARY SCHOOL,

BY

George F. Dutton, F.R.H.S.,

Head Master, Aldersey School, Bunbury, Cheshire.

It is now an acknowledged fact that the education of the labourer, more particularly of the farm labourer, is a subject which demands the serious attention of all educational authorities throughout the kingdom. We read again and again that, in this or that part of the country, farmers experience much difficulty in procuring good and reliable farm hands.

What is the cause leading up to this scarcity of labour? There are some who say that cricket and football are partly responsible for this state of things. Naturally, a lad who shines at his games finds it a very hard matter on leaving school to relinquish them and to settle down to work—yes, *seven* long days to the week. The attractions of town life are obvious—higher wages, shorter hours, more fun and excitement: these and many more all tend to entice the son of the labourer from country to town.

Now, what is to be done to inspire in the rural mind a fundamental liking for the country as opposed to town? The only answer I can furnish is this: Give him an education which will induce him to appreciate his rural surroundings —an education which will induce him to settle down to agricultural pursuits, and which will assist him in his work when he *is* settled down.

Let me quote one short paragraph from the excellent introduction to the new Education Code published in the present year :—" The purpose of the Elementary School is " to form and strengthen the character and to develop the " intelligence of the children, and to make the best use of the " school years available, in assisting both boys and girls " according to their different needs to fit themselves practi- " cally, as well as intellectually, for the work of life. With " this purpose in view, it will be the aim of the school to train " the children carefully in habits of observation and clear " reasoning, so that they may gain an intelligent acquaintance " with some of the facts and laws of Nature."

Now, those are most admirable suggestions, and it would be well if they could be carried out in their entirety. Nature Study subjects, begun inside the school and practised outside, prepare the boy for the garden and the farm.

I believe it is the wish of the promoters of this Conference to know what is done at the Aldersey School, Bunbury, in the way of educating the sons of farmers and farm labourers. This School—once a Grammar School with a small endowment, but now a Voluntary School—is situated in the centre of what has been termed the " fat Cheshire pastures," or the Cheshire cheese industry.

The School belongs to the Haberdashers' Company, London, who are still Governors, and take a deep interest in its welfare. The School is for boys only, and is a sort of finishing School for all the mixed Schools in the district. The scholars are drawn from a radius of *over six miles*, and yet the average attendance is equal to that of the best schools in the county. Now, about the education given.

In addition to the ordinary elementary subjects, provision is made for Nature Study, Practical Entomology, Agricultural Science and Rural Economy, Land Surveying, and so forth.

Nature Study has for many years been a very prominent and extremely popular subject at Bunbury School. The lessons are object-lessons in the fullest sense, for the objects are brought, as far as possible, by the boys themselves. (Our Nature Study Syllabus is set forth in Scheme C of the Specimen Courses issued by the Board of Education.) The son of the labourer, sitting in his class side by side with the son of the farmer, shows as much intelligence and as keen an interest in his work as anyone could wish to see. Each year, commencing in early spring, the lads are encouraged to make collections of agricultural grasses, weeds and wild flowers. These are afterwards dried and mounted, named and classified, and prizes are awarded for the neatest and best collections.

Practical Entomology, or the study of insects which are injurious to farm and garden crops, fruit and forest trees, and so forth, is a subject of which the lads are intensely fond, and the whole School take part in it. In order that you may form some idea of the good which may be done by boys in collecting and destroying insect pests, I will give you a brief outline of the work done in the early part of the present year. During the months of March, April, May and June my boys collected and *brought to school* no fewer than 299,812 living specimens of destructive insects. Amongst these were Ox Warble Maggots, squeezed out of the backs of more than 2,000 head of stock. (For the benefit of those who may not

have seen this creature, I have brought you a pot of these pests to look at, also a portion of the hide of a yearling to show you the damage they do.)

For many years past the attention of the boys has been drawn to the serious losses which farmers suffer from the Ox Warble attacks on their cattle, for not only do the perforations of the maggots lessen the value of the hides, but the loss is very considerable in flesh, milk and health in summer, when the animals are galloping frantically about, being tortured by scores of these powerful maggots, which are an inch or more in length, and which are feeding on the sores which they have made in the under tissues of the hide. The cattle in the parish of Bunbury are now comparatively free from this pest, but some maggots will always be found, unless more care be taken in inspecting newly-bought stock.

A sort of roving commission has in late years been granted to the lads, for they now visit the farms in the surrounding districts for the purpose of collecting these creatures.

In addition to the maggots squeezed out, many thousands have been suffocated by the application of smear.

Our returns show the benefit of the treatment, whether on the broad scale of the many head of cattle owned by tenants of large farms under the Duke of Westminster, Earl Crewe, Lord Tollemache and other great landowners, or to the one or two cows of a small holder, to whom the health of his animals is even more important.

We do not go into scientific points, nor is the work in any way compulsory.

By desire of the Haberdashers' Company, this work was begun more than twenty years ago, and has been carried on ever since. At first the boys were shown a few warbles, told their history, and were asked to bring what they could find. The excitement and energy of the lads was most remarkable. It happened to be early summer, when the warble maggots then in the backs of the cattle were nearly ripe—that is, fully matured—and hence could be squeezed out without much exertion. The maggots were brought to school in match-boxes, mustard tins, and by every other conceivable means. Mr. Bailey (the late Head Master) noted the numbers and other details, and at the end of the season gave the results in a tabulated form. This process has been carried on from year to year at Bunbury School with unabated interest. We have found that where the cattle were properly attended to last year by the warble maggots being squeezed out, or the animals' backs dressed with smear or cart-grease, there were scarcely any maggots to be seen this year. Where, however, this precaution had *not* been taken the enemy was to be found in full force. In 1887 an account of the work done at Bunbury School was (at the request of His Grace the *late* Duke of Westminster) written by Mr. Bailey, and afterwards read by the Hon. Cecil Parker before one of the Committees of the Royal Agricultural Society of England, and recommended for publication.

This work is no mere fancy or half-proved experiment. It shows not only the benefit of getting rid of warble grubs, and the thoroughness with which they can be cleared out of a district, but the benefit of plain, common-sense instruction on the subject of farm-insect pests.

In addition to this pest, we carry on incessant battles with the Wireworm, so destructive to the roots of young oats, grass and clover; Leather-jackets, or the larvæ of the daddy-longlegs, which do untold mischief to the roots of growing crops; Larvæ of the Gooseberry and Currant Saw Fly, little greenish caterpillars which devour the leaves of gooseberry and currant bushes; Winter Moth Larvæ, a terrible pest to fruit trees and to the young and tender shoots of rose bushes; Larvæ of the Magpie Moth, a pretty but most mischievous grub which preys upon the leaves of gooseberry and currant bushes, apricot, and almost all wall-fruit trees; Cock-chafer grubs, large, nasty-looking things which grow and thrive at the roots of growing corn, grass, etc.; Larvæ of the White Cabbage Butterfly, Black-currant gall-mites, American Scale, and a host of others.

All this is practical work, which, under proper supervision, might easily be taken up in country districts with beneficial results to the schools, the scholars and the general community. It is a work which tends to create a bond of sympathy between the teacher and the taught; it is a work in which parents take a lively interest. It is valuable and instructive to all; and, last but not least, its universal adoption would be the means of saving thousands—yea, *millions*—of pounds every year. The attack of Ox Warble alone has been estimated by practical men at sums from two millions to seven millions per annum.

In the spring and summer months the boys look upon this work as a sort of hobby. The poorer boys like the occupation quite as much as their more fortunate school-fellows, and the same may be said of Agricultural Science, Land Surveying, etc.

To the late Miss Ormerod, Bunbury School owes a deep debt of gratitude for the impetus given to Practical Entomology. The late Head Master (Mr. Bailey), who retired after forty-seven years' service—all spent at Bunbury School—was much devoted to this work, and received ready and valuable personal help from Miss Ormerod.

Give the labourer's son school-work which he can appreciate, work which will be useful to him in after-life, assist him in developing his powers of observation, aim at stimulating a spirit of inquiry, try to impress upon him the beauty, wisdom and variety to be found even in the lower forms of creation, make his school-work less bookish by giving him an intelligent knowledge of his surroundings, give him more practical work, try to foster a greater interest in country life and country pursuits, and thus help to check the present mistaken rush to the towns, and he will reward you by attending school more regularly, and by doing so lessen the burden of the ratepayers. Moreover, you will have the satisfaction of knowing that you have done something to promote the cause and to raise the tone of the average agricultural labourer.

HIGHER PRIMARY SCHOOLS

(*écoles primaires supérieures*),

BY

RÉNÉ LEBLANC

Inspector-General of Public Instruction in France.

The higher primary school occupies buildings distinct from those of the elementary school, and is under a different management, except in special cases where the Minister of Public Instruction has authorised both schools, as forming a single unit, to be under the same management.

The minimum course of instruction at a higher primary school is for two years. If the course be for three or more years, it is then termed a "complete" course (*de plein exercise*). Three hundred schools of the latter type are now in operation under the Ministry of Public Instruction.

The school must have as many class-rooms as the number of years comprised in the course, as well as a room for drawing, a gymnasium, and a workshop.

No pupil can be admitted to a higher primary school unless he holds the certificate of elementary education, and can show by a certificate signed by the Primary Inspector that he has been for a year at least in the highest class of an elementary school.

The instruction in higher primary schools is entirely free, and the State provides certain national bursaries. These are of three kinds :—

(1) Bursaries for boarding expenses, given to pupils at higher primary schools which have accommodation for boarders.

(2) Bursaries for maintenance, given to pupils residing at their own homes and attending the higher primary school, or the classes supplementary to the elementary school, of the district.

(3) Bursaries for pupils residing elsewhere than at their own homes with families approved by the director or directress of the higher primary school or of the supplementary classes.

The State bursaries are awarded on the authority of the Minister of Public Instruction by the Prefect of the Department upon the nomination of the Inspector of the Academy, after consultation with the Council of the Department.

No one can have the advantage of a bursary without undergoing a preliminary examination to test his fitness. The award of a bursary is determined by a general estimate of the qualifications of each candidate. In this examination account is taken, first and principally, of the child's individual merit as shown in the examination ; secondly, of any services which the parents may have rendered to the State ; and, thirdly, of the financial circumstances, number of children, and family expenses of the parents.

The higher primary instruction includes :—

(*a*) Morals ; (*b*) Civic Instruction ; (*c*) The Mother tongue and some idea of French Literature ; (*d*) National History, together with some General History especially of modern times ; (*e*) The Geography of France and her Colonies, supplemented by General Geography, with special reference to Commercial and Industrial Geography ; (*f*) Modern Languages ; (*g*) The elements of Common Law and Political Economy ; (*h*) Arithmetic, mainly in relation to commerce ; (*i*) Ordinary Accounts and Book-keeping ; (*j*) Elementary Physics and Natural Science, chiefly in their application to Agriculture, Commerce and Industry ; (*k*) Geometrical Drawing ; (*l*) Ornamental Drawing and Modelling ; (*m*) Gymnastics ; (*n*) Iron and Woodwork for boys ; and (*o*) Needlework, cutting-out and repairing for girls.

In higher primary schools with a complete course, and when the number of pupils warrants it, the Minister of Public Instruction may authorise, from the commencement of the second or third year, the formation of one or more special sections—agricultural, industrial or commercial. This authority will be given at the request of the School Committee on the approval of the Inspector of the Academy, after consultation with the Municipal Council.

For these professional sections (industrial, commercial or agricultural) a certain number of hours will be assigned to special classes, or additional lessons. These will either be given to practical work by the pupils, or to excursions or visits in order to supplement the professional instruction.

TIME TABLE OF THE HIGHER PRIMARY SCHOOLS, WITH AN AGRICULTURAL SECTION.

HOURS PER WEEK.

Subjects.	General Education. First Year.	Second Year.	Third Year.	Agricultural Section Second Year.	Third Year.
Moral Instruction	1	1	1	1	1
The Mother Tongue	5	5	5	2	2
Writing	1	1	1	1	1
History and Civic Instruction	1	1	2	1	1
Geography	1	1	1	1	1
Modern Languages	3	3	2	—	—
Mathematics	4	3	3	2	2
Accounts and Book Keeping	—	1	1	1	1
Physics and Chemistry	2	2	2	2	2
Natural History and Hygiene	1	1	1	2	2
Agriculture and Horticulture	1	1	1	3	3
Common Law, Political and Industrial Economy	—	—	1	—	1
Drawing and Modelling	3	3	3	1½	1½
Manual Instruction and Agriculture	4	4	4	6	6
Gymnastics	2	2	2	2	2
Singing	1	1	1	1	1
Miscellaneous work according to requirements	—	—	—	3½	2½
	30	30	30	30	30

The agricultural teaching, which does not appear in the programme of the other sections, also comprises practical work. This is entrusted sometimes to a special professor appointed by the Ministry of Agriculture, and usually holding the degree of Agricultural Engineer, and sometimes to the master responsible for the instruction in natural and physical science, if he possess the necessary certificate of fitness to give agricultural education.

The Ministerial circular of May 12th, 1898, which accompanies the official programme of April 25th, 1898, insists emphatically upon the necessity of establishing complete correlation between the agricultural teaching and that of the physical and natural sciences. The attention of the professor is drawn to the evils which are sure to result from any want of harmony between the different branches, which ought each to be the complement of the other, and be thus directed towards the attainment of the same end.

The agricultural teaching, then, ought to have that of the physical and natural sciences as its base. Consequently, the professor of science ought to give the pupils in advance some idea of the manner in which the theoretical lessons will be applied to the agricultural lessons. This recommendation is naturally carried out when the two branches are entrusted to the same professor. Where this is not the case, the harmony insisted upon by the Ministerial scheme is often wanting, and one is driven to admit that the best agricultural classes are not those which are in the hands of special professors, even when of great ability, but ignorant of the rest of the school organisation.

Practical Work in Agriculture and Horticulture (Six Hours a Week).

In the agricultural section the special programme in agriculture will include the following subjects in the time devoted to manual and agricultural instruction :—

Work Indoors.

Seeds :—Seeds of cultivated plants and of weeds—dodder seeds—removal of dodder—how to ascertain the

purity of seeds—germination—determination of the germinating power in seeds.

Soils :—Their composition—mineral elements—mechanical analysis of soils—rocks of the locality—soils formed from these rocks—transported soils—collection of samples of different soils for analysis—difference between the soil and sub-soil.

Manures :—Appearance of chemical manures—their preparation and application—the taking of samples of chemical manures for analysis.

Agricultural Machines :—How to take them to pieces and put them together again—oiling—supplying new portions—uses of the various machines—how to keep them in order and repair them.

Plant life :—A truss of hay—an herbarium.

The Dairy :—Milk—determination of the amount of cream—butter-making—cheese and rennet making—the need for extreme cleanliness.

Dentition :—How to tell the age of animals by their teeth. (The pupils will have lessons on anatomical models and, from time to time, on live animals.) The foot of the horse, ox and ass—shoeing—how to prepare and fix the shoes.

Bee-keeping :—Bee-hives—different kinds of hives—how to make them, especially those with removable frames.

Gardening tools :—The preparation of straw-matting—trellis-work—vine props—grafting tools—rakes—handles of tools, etc., etc.

Remedies for plant diseases :—Preparation of quicklime—milk of lime—solutions of sulphate of iron—Bordeaux mixture, Burgundy mixture, and similar compounds for spraying—sulphate of copper, etc.

The Sprayer and its use :—The application of sulphates to seed corn.

Farm-buildings and material :—Fowl-house, rabbit-hutch, pig-sty—how to keep them in order, washing, painting, etc.

Disinfection of the buildings, cowhouses, stables, sheepfolds, etc.

Breeding :—The rearing of bees—the rearing and fattening of rabbits, pigeons and poultry.

Collection of insects.

WORK OUT OF DOORS.

The use of the spade, rake, roller, shears, etc.

Grafting, transplanting, layering, weeding, &c. :—Different means of cultivation.

Manure :—The care of manure—the preparation and spreading of complementary manures (mineral and others) —the making of composts.

The removal of mildew from vines, peas, melons, etc., with flowers of sulphur by means of bellows.

Spraying with copper preparations to protect potatoes and tomatoes from disease, vines from mildew, pear trees from blight, etc.

Harvesting, storing and preservation of crops, cocks, stacks, ricks, silos, etc.

Special plots for studying the action of different manures on different varieties of cultivated plants.

Visits to nurseries, gardens, farms, markets and fairs in the neighbourhood. Each pupil must write an account, which the professor will carefully correct, of every visit or excursion.

A portion of the work indoors is done in the workshop. This is intended to give the lads a liking and aptitude for good workmanship. At the same time it will enable them eventually to take the implements of husbandry and agricultural machinery to pieces and to reconstruct them, to execute a number of minor repairs, and later to do a considerable amount of useful work in the house during bad weather.

The rest of the work indoors consists principally of experiments and various scientific manipulations. Practical demonstrations ought to be the indispensable complement of the theoretical lessons, so that the work out of doors may be performed with intelligence.

Out-door work includes all the operations of the garden and demonstration plot. When the area under cultivation, however, is considerable, the labour and implements for it are supplied by some neighbouring farmer, since the schools, as a rule, have only hand implements. But although the pupils are then restricted to watching the ordinary tillage of the soil, they perform all the rest of the work themselves —*e.g.*, the apportionment of the land, measuring the

plots, the preparation, weighing and distribution of the manures and seeds, the weeding and less important acts of husbandry. Finally, the harvesting, threshing, the weighing and other operations enable them to ascertain the exact return, and to strike a balance between the value of the crop taken off and the cost of the manures for replenishing the soil.

I should like to add that the rudiments of science and of agriculture are being more and more taught with better results in our elementary schools. In certain parts of France three-fourths of the masters and a fair number of mistresses have intelligently carried out in their gardens the experimental demonstrations which I suggested more than twenty years ago, and which formed the principal object of the official programme of January 4th, 1897. They constitute, I may remind you, the starting point of the whole of our agricultural education. I sent a very interesting collection of such demonstrations from the neighbourhood of Nantes (where this instruction has become general) to the Exhibition at St. Louis.

In my opinion, we must introduce something between what is done at the elementary school and at the higher primary school by means of winter courses of four or five months' duration, so as to give our future agricultural labourers that theoretical and practical knowledge which they cannot acquire at their own homes. The practical agricultural work would be done in fine weather on their parents' land.

I intend to make an experiment in this direction from

the 1st of November this year, and the scheme has already met with considerable encouragement.

One can establish such a winter course of four or five months at a total cost of £8. The course will include :—

MORNING.

(1) Simple experiments in physical and natural science applied to agriculture and to farm hygiene.

(2) Simple theoretical and practical instruction in the different branches of local agriculture, based upon the preceding experimental lessons.

(3) Some practical ideas on common law.

(4) Mathematics in relation to the measurement of surfaces, solids, etc., and ordinary calculations, reports and accounts.

AFTERNOON.

(1) In the workshop, the repairing of tools, etc., the construction of common implements and so forth.

(2) In the laboratory, the handling of manures and of substances intended as remedies for plant diseases.

This second part is identical with the programme of the higher primary schools under the heading " Work Indoors."

During the summer the pupils will return three or four times to observe the cultural demonstrations.

But all this is as yet only a project, and before describing it in detail I wish to test the results.

MR. MARTIN J. SUTTON : I had not the slightest idea of speaking here to-day, but my friend, Mr. Medd, has decreed that I am not to be let off, and, as my train is just going, I shall only detain you a few minutes. I would congratulate you, Sir John Dorington, on presiding over such an important meeting, and Mr. Medd and Mr. Bathurst on organising such a meeting. I would congratulate the meeting itself on being privileged to hear such illuminating addresses, and heartily congratulate Gloucester on being the host of such a Conference. But there our congratulations to Gloucester must cease, for on looking at Lord Onslow's illuminated map it will be seen that Gloucester does not participate in the educational advantages that some of our other counties enjoy, and we must hope that one result of this Conference will be the provision of such institutions, so that another lovely tint will appear over that portion of the map representing Gloucestershire which is at present so distressingly wanting in colour.

May I say that I do cordially agree with those in this room who have advocated that *practice* should come *first* and *science afterwards* in all agricultural education.

I am confident it is a mistake to think that a child is fit to receive scientific instruction. As Professor Wallace says, a child's brain is not fit for it, and he has not come to such years of discretion as to feel the desirability or necessity for it.

Therefore, I hope a scheme of agricultural education will eventually evolve as a result of this Conference that will ensure a child being brought into touch with the country in his early years. I believe from the time he can toddle he can learn something by being taught to observe the common

objects of the country. I have no time to go into details, but the difficulty is, under present conditions of teaching, that all he has learnt as a little child has to be forgotten as he advances in the school, because less is taught about our own country life than about the life of every other country in the world. Instead of being instructed in such subjects as our own breeds of cattle, horses and sheep, and plants useful for food for man and beast, he is taught about all kinds of things that can be of little use to him if he remains in the village. Of course, it is right that the country lad should have an elementary knowledge of geography, history and such-like subjects; and it is necessary that he should be taught to read and write and cipher, and *I* should like him to spell (*pace* Mr. Verney), but I contend that the curriculum of a country school should be such as would stimulate him to take a further interest in what he sees on the land, in the field, in the farmyard, the garden and everywhere.

The taste for country life can only result from practical knowledge of country objects, followed up by teaching directly relating to such objects, and therefore practice must come before science. "Practice with Science" has always been the motto of the "Royal" Society from its inception. Should we not take that as our text in the future?

Mr. Lambert has said something about the agricultural labourer not being so good as he should be; but that is largely our fault. He is not so bad as he is sometimes made out to be. Is not the retaining of the best men on the land largely a question of wages? If you want a decent man you must pay him a decent wage, you must give him a good cottage to live in, and some of the amenities of life now only provided in the towns.

I know the difficulty of finding good cottages and money for decent wages, but my experience has been that it pays to have a good man, and it also pays to give him good wages, otherwise how can we account for the high wages in the Scotch Lothians, where labour is paid at a rate half as much again as in the South ? If you will permit me to make an allusion of personal experience of the result of developing in the farm labourer a real interest in his work and a wholesome emulation to excel in it, I may say that only the other day the head carter, stockman and poultryman on my farm took away in their pockets nearly £10 in prizes from the ploughing match in the district.

There is never any difficulty in getting these men to work early and late, and to take a personal interest in every farming operation. But perhaps they get a little more than some others in wages.

I should like to call attention to the crux of this question of Nature Study teaching in our elementary schools. The real difficulties are two in number :

(1) The impossibility of at present finding sufficient teachers able and willing to qualify for it ;

(2) The failure of the present staff of inspectors of the Board of Education to insist on the Local Education Authority rising to the occasion and providing the teaching required.

The local education authority considers it sufficient excuse to point out the lack of qualified teachers, and the inspectors, having no real interest in this new departure,

which they scarcely believe in themselves, are content to allow matters to drift.

Surely the Board of Education might appoint half-a-dozen special inspectors, thoroughly imbued with zeal for Nature Study and elementary agricultural teaching, and strong enough to see that these important subjects have their proper place as well in training colleges as in the rural schools. And, similarly, the Board of Agriculture may well be urged to see that their inspectors are more alive than ever to the necessity of bringing all the institutions they have to deal with up to concert-pitch.

May I add a word or two on the subject of the teaching of agriculture in our University colleges ? I do wish our agricultural professors could see their way to stick to their last, or, in other words, confine their efforts to the inculcation of the science of agriculture, which they do understand, rather than attempt to teach practical farming about which many of them know little or nothing.

It is this farming by professors which has brought such ridicule upon scientific agricultural teaching, and the attempt of each agricultural college to run a farm of its own, at the risk of bankruptcy, is a lamentable blunder.

Twenty or thirty acres of land as an open-air laboratory to confirm or disprove the experiments of the test-tube and balances, will be found most useful, and, indeed, eminently desirable ; but the attempt to run a farm, either by a professor or a college committee, will generally only result in providing a laughing stock for all neighbouring farmers, and an example for them " how not to do it."

Even if rent free the initial outlay for the equipment of a farm is a serious inroad on the all too slender capital of most colleges, while the certain annual loss is a constant drain on income.

It will be far better to elaborate the local experiments which Mr. Middleton has so wisely recommended, and get the farmers themselves interested in investigating on their own farms the scientific problems the agricultural professor is so well able to set for their instruction, but which the farmer is so much better qualified to carry out in a practical manner.

I am quite aware that parents who, having made their money in other trades and know nothing of farming, may suppose that their sons can learn farming best at a college which runs a farm, and the fact that a farm is so run reads well in an advertisement, but it is a costly advertisement, and one which will never attract a farmer's son, but, on the contrary, cause him to give that college a wide berth.

It appears to me we are expected to provide agricultural college farms for the sons of those who have no stake in the soil, rather than for the sons of the farmer. I object to such an enterprise as much as I now object to be compelled to educate the sons of the farmer and farm labourer in such a way as to fit them for nothing else than town life.

THE EDUCATION OF THE EXPERT.

BY

A. D. HALL, M.A.,

Director of the Rothamsted Experimental Station.

In speaking of the training of the teacher and expert I wish for the present to deal only with the men who will be teaching in our agricultural colleges and higher schools, the men who are lecturing or conducting experiments for the county councils, with the men again who are required to fill similar functions in our colonies and dependencies, and in so doing I must of necessity cover some of the same ground as the earlier speakers on higher agricultural education.

If I may say so, the training of the teacher is to a large extent the crux of the whole question at the present time. We may have Conferences, we may draw up schemes, and the various Boards concerned may talk about syllabuses, but unless we have teachers, teaching in the right spirit, and backed up in the right spirit again by their authorities, we shall advance not a single step further in this matter of agricultural education.

When you start teaching agricultural science, or giving agricultural lectures in almost any part of the country, the first thing met with is a very strong spirit of prejudice against such work on the part of the actual farmers in the district; and it depends upon the teacher who is sent there whether the prejudice is removed or intensified for another generation. I could mention a place within my own experience where

a bad lecturer—a man who pretended but really didn't know his subject—sent out in the early days of the movement, has ruined that place educationally for at least ten years; where later efforts to introduce experimental plots were stifled, where no lecturer ever got a hearing afterwards, and where the tales about the enormities this man had preached from a practical farmer's point of view grew each year with constant accretion. In that kind of way the provision of sound teachers becomes of the very first importance.

We also want a great many more men than perhaps we at first sight realise. We want a great many men for our Colonies in connection both with practical agriculture and agricultural science. Only those who are actually engaged in this work can realise what a draft of the best men passing through our Colleges the Colonies are taking from us. Some of the most promising of my own pupils—men who would have been each in their own district a great mainstay to the agriculture of this country—have gone out to the Cape, to the West Indies or the Transvaal, where a demand has grown up recently for properly highly-trained men. For it is not only scientific men that our Colonies are calling for, but practical men. As Lord Onslow has pointed out, practical men were called for to grow cotton in Africa, tea or spices in India, rubber in the East Indies, cocoanuts in the Leeward Islands, and a score of other odd things in out-of-the-way places in the world; and these sort of men are all being drawn from the old country at the present time.

Taking the home demand first for teachers and experimenters, we must recognise that we had to start a few years ago with a somewhat poor supply. This agricultural

education burst rather suddenly upon the country, and there were neither the institutions nor the material ready to supply the kind of men that were wanted. Again, I think our electing bodies and education authorities are also to blame in the sort of standard they have laid down for the men they employ.

It is very often the case that you find an education authority advertising for a man to teach and lecture farmers about stock and crops and so forth, and they ask at the same time that the man shall put in his spare hours in analysing soils and manures in a laboratory. Now, I should like to impress upon this meeting the absolute impossibility of any one man fulfilling two such diverse functions in life as that. It seems to me absurd that men, members of an agricultural education committee, who individually are loud in denouncing the idea that any "professor" can teach the farmer anything, are yet quite willing to get a man who has only had a two years' course in an agricultural college, and send him to instruct their farmers on the one hand, and also expect him to be a chemist and an analyst. Not more than two years ago one of these counties coloured white on the map over my head did advertise for such a man. This wonderful "Professor" was to lecture on the stocks and crops of the farm over a large county, and to analyse soils and manures when he was not lecturing, and for that he was to have £85 a year.

We must take our work a little more seriously than that. There are few things more dangerous to play with than agriculture. If we want men to teach farming we must insist on having farmers, and scientific men to teach agricultural science. No man can do both.

Do not let us be led away by talk about the "practical man." The only practical man I recognise is the man who knows his business by experience as well as from books, and that experience has to be gained by the "practical" chemist in a laboratory just as by the "practical" farmer on the farm. I am not for a moment minimising the necessity also of some training in agricultural science for the farmer and of some knowledge of farming for the agricultural chemist. I am only pointing out that when a man begins to teach he must have elected for one side or the other, and that it is impossible for him to gain the working experience on which his teaching should be based in both of these vast subjects.

So far as my own experience goes, the actual farmers with whom you have to deal are very well content to take the advice of the chemist or the botanist, provided that they stick to their particular parts and do not pose as farmers.

For the training of the people of this class—the training of the teacher and the expert—we have at the present time a certain number of centres of University rank. We have, for instance, the Scottish Universities, where a man can proceed to the degree of Bachelor of Science in Agriculture, and London has started a similar degree, also the Welsh Universities and the University of Durham. At Cambridge a man can add a Diploma in Agriculture to his ordinary degree in science. At all these we get the course we want for the training of the expert—that is to say, a course of instruction of at least three years' duration, which, while it begins with a very sound scientific training, specialises later on, and enables a man to diverge according

to his ultimate object. If he is going to become a teacher of agriculture, he can pass out from a farming point of view ; and if he is going to become a chemist or a botanist, he can specialise in that direction and pass out on that side.

We must not try to get all-round " admirable Crichtons," who know everything. The kind of examination we want to avoid in this direction is the examination organised at the present time by the Royal and Highland Agricultural Societies. Here they have ten subjects, and a man is not considered equipped for his profession unless he is an entomologist, has passed in veterinary science, agricultural chemistry, botany, geology, land surveying, and so on and so on, all of which subjects are considered to be equally necessary. But that kind of training tends to produce a hybrid whose only chance of existence is when talking to a farmer to pretend to be a man of science, and when talking to a scientific man to pretend to be a farmer.

If I may be allowed to go on, I would say that in the training of a teacher or an expert you want to go a little farther even than the University course. It may seem too long a training, but it is in the hands of the Education authorities to appoint only suitably equipped men. What should be the further training ? Again, it depends whether a man is going to teach agriculture or agricultural science. If he is going to teach agriculture, I say he must go on a farm after his college course. I would ask every local authority to insist that the man who is elected to teach farmers should have himself worked on a farm, and knew by actual experience what he was talking about.

I would say the same kind of thing in regard to the

scientific teacher, the botanist or the chemist. He must have had more than his student's course. He ought to do some research, some investigation, for at least a year before he begins to teach on his own account.

Take, for instance, a man who would have to conduct agricultural experiments. Now, in my position I am doing nothing else, and I am vain enough to believe that it takes a little learning how to conduct agricultural experiments. I would say future experts who are going to be appointed by the various county councils may well get themselves instructed a little in the art of devising and carrying out agricultural experiments. I am not, of course, here speaking of the experiments every farmer ought to do for himself, but of public work that is meant to be of service to the district.

So I say, again, they ought to be made to do for themselves, or assist in doing, what we call research—that is, investigation into something new, something about which everything has not yet been discovered. You see, the student all through his student's course has only been told what is known; but if the student in turn is to become a teacher, you want him to go to a research laboratory where he shall be awakened to a sense of what is unknown, and learn the right method of attacking new problems for himself.

After a student has completed his college course and wants to go on to teach, he ought to change his teachers. Let him go to another college and get into contact with other men, with other ideas. The agricultural chemist can come to us at Rothamsted and do work in scientific investigation of crops and soil; if a botanist, he also can find material at

Rothamsted, or he can join another university where good work in his line is going forward.

In Scotland, through the generosity of the Carnegie Trustees, the professor of Agriculture—as my friend, Professor Wallace, has already done—can provide his pupils with a year or two at some other institution to continue their education by taking up research work after they have won their degree. I should like to know if something in that direction might not be done in England, along the same lines. Our University Colleges, by means of the 1851 exhibitions, give research scholarships to their most promising pupils in pure science; and why should not agriculture get hold of some of this inheritance, or why cannot the Board of Education and the Board of Agriculture, working together, look after some of the most promising men at our English agricultural colleges, and enable them, by means of research scholarships, to continue their training for another year or so before they plunge into teaching? You may think, perhaps, I am exaggerating the importance of research. But you cannot say too much for the necessity of work of this kind in the training of the future teacher and for the future expert who is to go abroad to work for this great empire of ours beyond the seas. He is sure to be called upon to face new unaccustomed problems. He cannot work by routine. He must strike out a line of his own, and we want to give him a preliminary training in the work of research so as to make sure when he is faced by these unaccustomed factors he will be able to set to work in the right way to solve them, and will not have to try to "muddle through" by the light of nature.

If I may say one or two words more as to the provision

of teachers for elementary schools. We do want them—as everybody says in this room to-day—to have a country bias, to be able to give some sort of country instruction. Where are they to be taught that ? Of course, it has been impressed upon us that they should be taught in our training colleges. But I think if you knew the burden upon our training colleges already to attend to the general education of the men and women who go there ; if you knew how raw the material they have to work upon, and the many demands on their time, you would see it was practically impossible for training colleges dealing with town as well as country teachers to devote any definite attention to agriculture.

What I would say is simply this : you can in these training colleges, and you ought, in the general interest of the development of the men and women who go there, whatever their future destination, to give them a training in the application of the experimental method to the study of living things. They should have a definite training, not in what is technically called " science," but in the art of doing experiments with plants and animals, so as to find out how they grow.

If you teach these students the right way to set to work, how to work by experiment, how to ask questions of nature and make nature answer them, and get them in the right way of looking at things, then you can trust the teacher, when he gets back to a country school, to work out his own salvation, and thus find a way of educating the scholars and himself in a way that will be helpful to agriculture. The training colleges and the elementary schools are not the places to teach agriculture, but even there the students get into a

way of looking at nature and at life that will be of benefit to the agriculturist.

If Mr. Morant and his Department can secure this preliminary training in scientific method for all teachers, then the local authority and the teacher himself can build up on it a system of rural education suited to the elementary school.

LORD MONTEAGLE: I am much obliged to the Chairman for allowing me to add one word to what has been just said. It is suggested by the very interesting address which we have just listened to from Mr. Hall that in talking about what had been done in Ireland I stated that the Agricultural Department had rather given the go-by to institutions, by stating that institutions must wait. I just want to qualify that. I should have said as regards the teaching of farmers and sons of farmers, that institutions should wait. The Agricultural Department realised from the first the very great importance of this branch of the subject with which Mr. Hall was dealing—that of training the teachers—and have set to work in that direction. One of the very first things they did was to start training courses for teachers, which, I am happy to say, although they do not quite keep pace with the demand, have turned out a very fair supply of teachers in Ireland.

MR. MORANT: I should like to point out, with reference to Mr. Dutton's paper, that the school at Tarporley, with the work of which he has dealt, is an elementary school conducted under the Code, and that those who have been just now hearing a description of that work are able to do the same under the Code. Remember, it is not we (the Board of Education) who stand in the way, as I ventured to point out in the course of my earlier remarks. It is all done under the Code, and, I venture to say, it is the sort of thing we mean to press for under the Code wherever you see your way to carry it out. With regard to what Mr. Hall said at the end of his address as to the point which he wanted to impress upon me, I can assure him that I feel as strongly as anyone can the importance of getting that attitude of mind

in the work of the training colleges. I say that your local authorities can bring that about far more effectively than we can from Whitehall. We do our best, but you must take the lead in getting this done. Whether in scholarships or whatever it may be, or by choosing teachers of a certain type, you can gradually bring it about far more quickly than we can. I can assure you that we shall be only too glad to do all we can to help bring it about as well.

THE TRAINING OF TEACHERS

(Industrial and Agricultural Section)

BY THE

REV. CANON STEWARD, M.A.

Principal of the Salisbury Training College.

It is an honour which I appreciate, but did not seek, to be asked at such an important Meeting as the present to speak on matters cognate to *the training of teachers*, more specifically with a view to this, *one* of England's most important industries; but may I add, only *one*. And therefore when we ask for latitude in our school curriculum, and special financial assistance for Agriculture, we must remember the claims of other industries. I should like to thank Mr. Hall for his remarks, and to express my appreciation of Sir Thomas Acland's paper.

I fear that my contribution to the discussion may not be of much practical value, because it is to a certain extent visionary. It is only with regard to teachers in the Primary School that I can speak with confidence. And even with regard to them I am not quite clear *what teaching directly bearing on, or leading up to, Agricultural interests* would devolve upon them. What is the product that you require from our Training Colleges?

During the five-and-twenty years that I have been Principal of a Training College for Elementary School Mistresses the Board of Education has offered, as part of our

curriculum, such subjects germane to Agriculture as Nature Study, the Science of Botany, and, for three or four years, that of Theoretical Agriculture itself.

With the exception of the first, this study was of little practical value, and, because of the exigencies of two stiff-written examinations, became very largely the study of the text-book.

Professionally interested as I am (as Principal of a College in a distinctly Agricultural District) in the pædagogic aspect of the matter before us, the theme appeals to me from another side—as a small landlord in a heavy, clay country, and for a few years an unwilling tenant-farmer. As a countryman and a parson, my life has been thrown much into touch with the labourer and his family, the farmer and the squire.

When we remember that it requires long years of practical experience spent in the farmyard and on the land, we must (*pace* Mr. Verney) come to the conclusion that little or nothing can be done directly to teach Agriculture in the Elementary School.

We recognise that *the exodus from the country* to the town is due largely to economic considerations of supply and demand and of wages, to social attractions, to insecurity of tenure of the home, and, possibly, to the unsympathetic attitude of the smaller farmers towards their employés.

Another factor that we cannot disregard is the nature of the instruction and the subjects taught in the past in Elementary Schools, or in Technical and Science Classes, under the direction of Whitehall and South Kensington.

These are obstacles which would be impossible, even if desirable, for a Primary School Teacher to overcome. It is, I presume, generally agreed by educationalists, in all countries, that *specialised* study to prepare the children for their practical work in life should not come within the primary course. The natural corollary of this is that the training of Primary School Teachers should not be specialised for this end during their Normal training.

What, then, can the Primary Teacher in a country school do to further the object that we have in view?

First of all, it is incumbent on him to lay a thoroughly sound foundation, directed mainly to the three R's; geography, physical and social; English History, political and commercial; together with some knowledge of the principles of Elementary Science and Nature Study. When we remember that a teacher has a boy under his influence from the age of seven to thirteen, I venture to think that he has full opportunities for developing his faculties and laying a sound substratum from which the boy may specialise afterwards. But we need more than this. I am prepared to admit that the removal of the children to school from the occupations of the life of the home and the farm has not been always followed by an equivalent increase of intelligence and common-sense, nor, in a large proportion of the children, by a due development of the reasoning faculties. Some people have thought that the children have lost their habits of observation and reflection. Certain it is that a charge is brought against our system that children lose the love of manual work and are less fitted for the duties of life.

The agent of a very large estate writes :—" Their hands " are soft, their physique is not inured and matured for " manual labour as it used to be, and they therefore dislike " it because it interferes with their personal comfort." And he goes on to deplore " this craze for technical education," and says that all skilled labour is disappearing.

Indeed, there is a widespread feeling that much of the money spent on so-called science teaching has been wasted. Classes in the country districts have notoriously been kept together by fictitious inducements, and, in some cases, the Classes having been closed, the science experts have been drafted off to duties outside their professional qualifications.

Let Primary School Teachers lay a solid foundation in writing legibly, in calculating correctly, in the love of acquiring knowledge by reading, in habits of observing and thinking, and set before the children consideration of social economics, and the attractions and drawbacks of the various occupations in town and country.

Again, as Sir Thomas Acland has said, beneath all this comes character formation : a love of work, application to the matter in hand, self-restraint, sobriety, thrift and honesty, with an English independence of character and " grit " ; to lead clean, straight lives ; to work when they work, and to " play the game " when they play. Here surely is a grand work ready to the hand of the Master of a Primary School !

No one whose heart is in his work and in the children's future will consider his duties over when the school door closes. Much may be done by guiding the children to take

an intelligent interest in their environment, to appreciate the processes of Nature around them, to foster the love of the soil and of the home, to be proud of their village, the produce of the garden, the crops and stock of their farms, and the prestige of their neighbourhood in the local shows and games. Thus, I venture to think, may be developed a type of character the value of which will be appreciated by every employer of labour, and which will tend to counteract that spirit of restlessness which leads many to the towns.

I have not introduced the element of Religious Teaching and Training to do their duty to God and to man. But I venture to think that, speaking generally, with this and the work I have indicated, the duties of the master of the Rural Elementary School end, and that Evening Classes, Saturday Excursions and out-of-hours gardening are outside the legitimate work of the Primary School proper.

To turn now to our Training Colleges : As long as the material that comes into College is as it is, and until the new methods called into existence by the Act of 1902 have justified themselves by producing a distinctly better educated Pupil Teacher than has been produced hitherto, the two-year course of training does not permit of specialisation in the field of Technical Education. The *raison d'être* of the Colleges at present is to train teachers for the Elementary Schools. If Technical Education is outside the curriculum of these Schools, then specialisation in this direction should not come into the College course. It is not sufficiently realised that the Elementary School subjects have to be studied not merely much more widely and deeply

by the teacher than will be the case with the child, but the teacher has to be trained in the best methods of presenting each of those subjects to his class. Every subject of the Code has to be handled in College from its primary principles up to its advanced study, both from the academic and the pædagogic point of view.

Assuming even better-prepared candidates in the future, two years will not be more than enough for this treatment of the subjects and for the training of the teacher in practical school-keeping and class management.

Some of us look forward to the time when the late Inspector, Mr. Rooper's, plans for school gardens will be adopted for many of the schools in country districts, but the care of these gardens should be under the supervision of practical gardeners, assisted, perhaps, by one or more of those Teachers of the School who may be interested in the subject, working in harmony with peripatetic instructors provided by the County Councils.

Such members of the School Staff as are willing to undertake this work as an extra to their ordinary duties could obtain help from Council Vacation courses and other Classes of which we have heard. At the same time, it would well come within the scope of a College training, would not add appreciably to the already congested syllabus, and would be equally suitable for the young School Mistress and for the Master, if the College course included :—

(*a*) Social and industrial economics.

(*b*) Certain special features of character-formation.

(*c*) Nature Study, in its less scientific application; and

(*d*) For those that have the inclination and time for it, some school-gardening or simple country operations studied sufficiently to form the basis of more advanced work at the classes of the County Council, only we must not expect their knowledge to be encyclopædic.

To come now to the training of specialists, for the more advanced teaching in science schools, commercial schools, and "schools of industry" and technical classes. Will it not be wise to require *all* such Head and Assistant Teachers to go through the full course of general training in pædagogy? They should know the principles of Education, be capable of handling a class of an age, and under conditions, in which discipline may be less easily secured (as with half-timers). They must be practically acquainted alike with the theory and the best methods of Education, as well as be able to present the subject from practical experience, and not from the text-book. It is clear that the specific training *ad hoc* cannot be included in the two-year course, except, perhaps, in exceptional cases. It will require one or two years of practical work, opportunities for which cannot be found in, and cannot be expected of, Normal Colleges for Primary Teachers.

My own view is that the time has come for further development of the machinery for teacher-training: that it would be an economic investment for the State, and exercise a marked influence on the production of skilled labour, and have a far-reaching effect on the products of this country, if Local Education Authorities combined to provide

Training Colleges for Teachers who wish to specialise, after their two years' ordinary course. The field of training would be a very large one : preparing men and women for *teaching* the varied subjects of a Polytechnic, of Art and Science Schools, of many crafts and industries, of Hygiene and Domestic Economy. Each student would be learning the practical work himself, and how to present it to a class, at the same time qualifying himself for his degree or his diploma, so that he would have the hall-mark of our University Colleges and other faculties for his own knowledge, and a very valuable certificate of high proficiency in teaching, the result of a three or four-year course of pædagogic training.

Under my own observation have come Teachers of Cookery and other County Council subjects who are absolutely unacquainted with the most ordinary principles of Education, and in matters of discipline have required the presence of some young assistant from the Elementary School to maintain order in their classes.

When our Secondary Education has been more perfectly organised, those more clever boys and girls who have a distinct bent for this or that branch of work may well have their attention drawn to the service that they would render to the State, to the world and themselves, by proceeding through a course such as I have indicated. Meanwhile, among the annual output of the Day and Residential Colleges there is no inconsiderable number of men and women the value of whose services to the State would be greatly enhanced if they could proceed to the third year at College for Specialisation in various directions, not merely in Agriculture. Presumably, such Colleges would be located

near a University or a town where special facilities for advanced study—say, in some branch of science, with laboratory work—could be found.

Other classes more directly studying rural industries and employments would be held in connection with large agricultural establishments; and Schools of Industry for Girls, in every kind of woman's work, could well have a training Institution for Teachers attached to it.

I observe that in *Sweden* they have children's workshops, or Homes of Industry, which are attended by children of the ages of seven to fourteen. Those from the poorest homes are selected, and meals are given to them. These classes are only open in the winter. In addition to this, there are *Household Schools* for the training of girls for their work in life; and, thirdly, there are "People's Colleges," the aim of which is to educate as citizens young people between the ages of 18 and 20. In the second year course is included Agriculture with Stock-breeding and Forestry.* In the *Netherlands* (as is well known from the reports of Mr. J. C. Medd and others) the provision for Agricultural Education is more thorough than in other countries. A State Professor of Agriculture is provided for each of the eleven provinces to organise instruction for the Primary School Teachers who desire to obtain an Agricultural Certificate.*

If we turn to the *United States* we find that Americans are acute enough to know what will pay in the long run for the nation or for the individual. They have what we lack —a clearly thought-out definite Educational policy. They look on money spent on Education as a grand national

* Special Reports of the Board of Education, 1902.

investment. They have Schools and Colleges providing for a course of Education from the age of seven to 24 years. The boy or the girl passes from the general education of the Primary School to the specialisation of the Higher Schools, which branches off on the three lines of :

(1) The Academic, or literary study ;

(2) The Commercial, or business training ; and

(3) The Manual, or hand industries.*

It may be objected that America is a land of millionaires ; but in *Norway*, where there seemed a likelihood of the best of the youth and strength and brains of both sexes migrating to America, we find being organised the same classes of school in the same sort of principles. In M. Grosjean's paper we have, to my mind, just the course that we might consider for our own adoption.

In *England*, however, we appear to stop just at the critical moment when the knowledge that has been acquired, when the character and habits of mind that have been formed should be specially developed and specially directed to the practical activities of life. It is with us a sort of *short service system*. We give the child a smattering of learning

* See Reports of the Moseley Education Commission, 1903.

The "London Argus," in an article on the subject of domestic servants, says :—"It is a significant fact that though there are, according to the last census, considerably over 200,000 domestic servants in the metropolitan area, there is not in the whole of the elaborate and costly system of educational training which the London County Council has under its control a single school or even class for training young girls for service. Let a maiden aspire to be a typewriter, a clerk, a dressmaker, or a music-teacher, and a hundred doors are eagerly opened to her. She is not only free to enter, but she is implored to come in, and in order that she may find things quite pleasant, nice little dances and evening parties are arranged for her benefit. The idea seems to be tacitly fostered that it is only through the clerical and industrial avenues that success in life is to be achieved."

and then turn him adrift, unfitted by its school-life for, and dissatisfied with, the calling of the father: the boy soft-handed—too soft all round for the duties of a rural life; the girl intolerant of domestic service. There is a deplorable lack of determination to make the very utmost out of the material (the bodies and the brains) that will determine the prosperity and destiny of the Empire forty or fifty years hence. Regard the large proportion of day labourers, mechanics and domestic servants, and consider how much more the State might have made of them had our Statesmen taken the matter in hand less half-heartedly and developed more fully the powers of mind and body with which the Creator has endowed them.

There is one thing the American respects, and that is *work* and those who work. In England we are half ashamed to be caught working, and are always hurrying off to don our mufti.

The sum of my plea is this: Let our authorities develop "Schools of Industry" on comprehensive but economically organized lines, where our boys and girls may be thoroughly trained in their life-work, whether in business or in industry. But to prepare for this let large central Training Classes be formed to receive the most promising of our young Teachers who desire to specialise in their profession.

It is a postulate of my paper that *all* Teachers should be trained in the principles of teaching—and thus to teach educationally every branch of learning: literary, industrial or commercial. But the authorities of Training Colleges must first *know precisely what the Teachers are expected to teach*; and I would again urge that County Authorities take steps to open Colleges for giving specialist-teachers a 3rd year training in the direction above indicated.

THE PREPARATION OF TEACHERS IN ELEMENTARY SCHOOLS FOR GIVING INSTRUCTION IN NATURE STUDY.

BY

R. P. WARD,

Director of Education to the Cheshire County Council.

The Education Code lays special stress on the desirability and importance of Nature Study with reference to the formation of a habit of intelligent and accurate observation, and to the application of that habit in the daily life and surroundings of the pupils. It appears to be generally acknowledged that in Nature Study lies the kind of special instruction that is particularly applicable to elementary schools, and suitable as the foundation upon which agricultural science may be based. No one seriously believes that farming can be taught in the elementary school, nor should such be attempted. The Nature Study may be supplemented and illustrated by garden plots, demonstration plots, or by visits to farms and gardens under the direction of the teacher, but cannot well at this stage be carried further. Just as authorities in towns are encouraged to take pupils to visit museums and art galleries, so should teachers in rural districts be encouraged to take their scholars to farms where good stock is kept, good methods of management, cultivation,

and cropping are adopted, and the newest and best kinds of machinery employed. Such farms are, or ought to be, available in every district.

It being conceded that Nature Study should be the course of instruction for the scholars, it becomes essential that the teachers shall be so trained as to be qualified to give the instruction required. Hitherto such has not been particularly the case, and thus a large proportion of teachers are not properly qualified to meet this call upon them. An attempt will no doubt be made in the training colleges to meet this in future, but we cannot wait for this consummation, but must deal with the acting teachers now in the schools. The first step, therefore, is for the various education authorities to provide such courses of instruction for acting teachers as shall not only qualify them to give instruction in Nature Study, but to present this instruction to their pupils in a simple and attractive manner, and so cultivate the power of observation in their scholars.

The Cheshire Education Authority has given great consideration to this question. Beginning some twelve years ago with a single class, it has gradually developed the work. A special lecturer is now set apart for this purpose, and his whole time devoted to it. The scheme as now carried on has two main features: (1) The provision of instruction to the teachers; (2) visiting schools and giving sample or model lessons to the pupils therein.

Dealing with the former of these: Five centres have been selected at which classes are held, one or other of which centres is accessible to every teacher in the county; and the teachers selected to attend are brought to the nearest centre

available. The lectures are given in the evenings, from six to seven. The lecturer attends at one centre on the Monday, another on the Tuesday, and so on, giving the same course of instruction at each. A scholarship is granted to each teacher selected to attend at a centre, which scholarship provides for the cost of railway expenses incurred. No fees are charged. On accepting a scholarship a teacher is required to sign an undertaking to attend regularly throughout the course, and to sit at the examination held at the close of the session. The number of applicants for these scholarships has been over 900. The numbers in attendance at the various centres vary from 45 to 65.

The course of instruction comprises 26 lectures, mainly on biology, and dealing with flowers, trees, grasses, and plant and insect life. A general account is given of the growth, nutrition, general structure and reproduction of flowering plants. Special attention is given to the life history of insects, both those beneficial and those injurious to animals and farm and garden crops. Several of the subjects are dealt with specially as object-lessons. The course contains one lecture on Nature Study, calendars, and the formation of school museums. The lectures are well illustrated by means of dissectible models, and diagrams, and wherever possible specimens of the flowers, plants, etc., dealt with are furnished to each member of the class. The teachers take careful notes of the lectures, and provide themselves with small pocket lenses with which to examine the specimens, under the direction of the lecturer. In addition to the lectures, four botanical excursions are worked in, arranged especially with the object of showing how plant structures are adapted to the needs of the plant, and

of becoming acquainted with the circumstances and conditions under which they grow. The teachers are encouraged to put questions to the lecturer, who also advises them as to what books to read on the subjects taken. The course begins in October, and ends with June of the following year.

A similar course was held last year, and for those who showed proficiency in the examination held at the close, and desired to further continue their study, an advanced course is being held on Saturday mornings at Crewe, and another centre for such at Victoria University, Manchester, the former class conducted by our own lecturer, the other by Professor Weiss.

In this advanced class the course consists of 18 lectures, and embraces a fair amount of dissection and analytical work, each meeting being of more than an hour's duration. The County Council provides sufficient microscopes and slides for the use of the class, and the teachers are required to furnish themselves with a box of dissecting instruments. Taking the whole of the classes together, over 300 teachers are thus under regular instruction. It may be interesting to know that over 900 teachers applied for permission to join these classes. The scholarships were as far as possible distributed to as many schools as possible in the county.

The second feature of the scheme is the visiting of schools and giving sample lessons therein.

On managers making an application for the lecturer to visit, an arrangement is made for him to do so, and give three lessons there on consecutive weeks. On such occasions

the pupils are taken outside, wherever possible, at least once, and the lesson given a specially practical turn. On these visits the lecturer can confer with the teachers, and advise them as to suitable courses of lessons to take up in their respective schools, and give suggestions as to how such should be treated. Teachers may, on applying for them, have the loan for a short period of some of the numerous diagrams which are the property of the County Committee, and are suitable for illustrating their lessons.

These visits of the lecturer have provided much and useful information as to the teaching of Nature Study in the elementary schools in the county, and the interest taken in the subject. Special attention has been drawn by him to the very good work being done in some schools, and the excellent results achieved. Scholars are shown how to make collections of plants, etc., and how to mount the same, also to collect the seeds of plants, grasses, etc., and gradually form museums for reference. In some districts special attention has been given to the subject of insect pests of the farm, and the interest of the pupils therein been most marked. An illustration of this is given in the case of the Bunbury School in the paper of Mr. Dutton. In other schools the germination of seeds has been specially taken up. In a school at Seaman's Moss, near Altrincham, a simple but effective arrangement for testing the germinating power of seeds has been fitted, and the farmers and gardeners are invited to send in samples to be tested. To this appeal they have readily responded, and the apparatus thus kept well at work.

There is great necessity for properly training boys

intended for the farm, so that, if workmen, they may be skilled workmen, and thus command the best wages; and if owners or occupiers, they may, by their skill and knowledge, get more produce out of the land, and thus benefit not only themselves, but the community at large. A well-organised system of instruction and training is as necessary for the person who takes up agricultural pursuits as it is for the artisan, and there is scope for skill and intelligent observation on the farm as in the workshop.

MR. HENRY J. ELWES: I have not many words to say, but what I should like in the first place to say is this: I most entirely agree with three of the speakers whom we have heard to-day. First of all, with Mr. Wallace, whom I have learned more from than from any other agricultural professor, because he tried to be really practical. He was a practical man before he was a professor.

I refer in the second place to Mr. Hall, in all of whose remarks I entirely concur. The difficulty of providing suitable teachers is really one which is hardly realised by those who do not know better than the ordinary public do what so-called scientific teaching sometimes is.

Now, I have been a practical farmer on a very large scale in three counties in England. I also have the honour of being a Fellow of the Royal Society, which, I suppose, entitles one to some claim to be called scientific. I do not think when people talk of scientific knowledge and science as applied to agriculture, or teaching science to children, they really know very often exactly what it means.

I look upon science as "exact knowledge;" and it strikes me as one of the greatest deficiencies in our Board School education and in the education of boys at the public schools, that "exact knowledge"—that is to say, the power of teaching to observe things correctly and completely—is a power which exists in very few of our teachers, because I do not think the teachers themselves have ever been taught the importance of exact observation.

That is where I think Mr. Medd has done such a good

work in this county by encouraging Nature Study, because if you treat Nature Study from the proper point of view, it means exact observation of the little things which come under our daily notice.

Now, I honestly believe, from what I have seen of country boys. that they do not know so much about the things of the country as they did when they were hardly taught at all, and that many uneducated people and some older men who were never taught to read and write, are closer observers and do know more about the common things of the country than the boys of the present day. I fully appreciate the difficulties which Canon Steward referred to with regard to the training of teachers. It seems absolutely impossible, within the very short time which they have in the training colleges, to teach them what only a few people are really capable of learning. I am inclined to agree with Canon Steward that after the ordinary course of training for teachers has been gone through then is the time to select the capable ones, if there are any sufficiently capable who have also a personal desire to carry those studies higher, and to use them rather in the way of peripatetic teachers than to expect special knowledge from people who have no taste for it.

The ordinary Board School teacher is at the present time in by no means such a high class as he ought to be. I think it has not yet been realised, either in our public schools, our private schools, or in our Board Schools, that the most honourable employment that a person can possibly have, and the one which ought to be considered, from the social point of view, as the most elevated, is that of the person who forms, or tries to form, the character of the rising generation.

If teachers are recognised as they ought to be recognised —as people who are following the first and most important of all avocations—then, perhaps, we shall get into a higher grade, and we shall get people whose influence will go further than it does now. That is a thing to be hoped for in the future; and certainly, when you compare the earnings of the ordinary Board School teacher now with those of other people who come from the same class, it is a matter in respect of which we may have very great hopes for the future.

Practice and science are supposed to go together in agriculture. For my own part, it seems to me that the help which science gives to agriculture is often much over-rated. As a practical farmer, I am not honestly able to say that I have been able to apply whatever scientific knowledge I may have in a profitable way. It is true, one may improve one's crops very much, and make them a great deal nicer to look at, but when it comes to the balance-sheet—which, after all, is what the professor and the teacher of agriculture ought to, but I am very sorry to say often does not, look to as the first point of all his teaching—the so-called scientific farming frequently ends in a deficit.

As farming is at present in England, it seems to me that a little science is sometimes a dangerous thing; that it is far better to try and follow the practice of the best local men who have been the most successful in the district where you live, than to try to apply more or less imperfectly proved scientific theories under different conditions, which might be useful in other places. What Mr. Hall said is very true: practices which are perfectly correct and accurate in one district are often completely useless in another district.

That is a thing which professors of agriculture and science teachers generally should never overlook : that without local knowledge—and local knowledge spread over a certain number of years—you may run the risk of bringing down upon the knowledge you have very unfavourable criticism, and, as has been said, cause the local farmers whom you have sought to instruct to go away with the feeling that you do not know so much about the matter as they do themselves.

I am very strongly in favour of endeavouring to inculcate upon the children in the schools, at as early an age as their natural ability, or want of ability, allows, some form of teaching which will compel them to observe correctly ; and if you find that at a later period they have sufficient taste to carry it farther, then I think you may do a great deal. But I am quite sure—unless boys are changed from the time when I was a boy, and unless the scale of intelligence and love of knowledge are greater among the children in the Board Schools than it was in the public schools—that the attempt to teach it as a general course to everybody is very largely wasted, and this time is diverted from other things in which they might do far better.

I hope you will not think I am trying to throw cold water on a movement which I very cordially support, but we must begin at the beginning, and try first to get teachers who know what they want to teach and how to teach it.

Mr. J. M. WHITE : I wish to thank you, Sir John Dorington, and especially the conveners of this Conference, for giving me and my brother farmers in this room an oppor-

tunity of hearing the opinions of so many clever men who have devoted so much attention to the subject of education, but I confess, however, that in no speech have I heard anything about how to make agriculture really pay, and, after all, if we are to take any practical interest in the question, it must be in that direction. I am afraid that one reason why our labourers do not take the matter up very much is because they feel that education diminishes their income instead of increasing it. If you wish to make the Education Act popular with the parents and useful to the children, you must so arrange the system of education that when the boys in our rural districts have made the necessary attendances at school up to twelve years of age they may be allowed to leave and go to work on the land, if they and their parents desire it ; and if they attend an evening school they would thus get the best technical and practical instruction possible. Some people think it impossible to have evening schools in country districts, but they have them everywhere in Cambridgeshire. If a rural county like Cambridgeshire can do this, there is no reason why other counties cannot do the same.

We have been told to-day, and very ably so, that farmers cannot expect to have the best of the pupils, because at present, generally speaking, the quick boys, the clever scholars, pass the standards and get off to work in the towns ; while the lads of strong muscles—who are not so sharp, but who will naturally have to go to work on the farm—remain, and we have to make the best of them.

I think you will agree with me that it is impossible to make a good labourer of a boy unless you begin at an early

age—not when a lad gets fourteen, or what we used to call a "hobbledehoy." If we could get boys a little younger we could make something of them, and they would finish their education at the evening school. After the age of fourteen they are too old and above being taught by the carters and shepherds who have to take them in hand. In many places I have seen the quick, little chaps get through their standards and off to work in the town or the factories almost before the age of exemption. On the other hand, the dull boys have to remain at school until they are fourteen—often as has been the case in our village school—a nuisance to the master and a hindrance to the other scholars. They are then above and beyond driving horses at plough or being taught how to work, and yet they are just the lads who will have to earn their living by the toil of their hands, and, if taught early, they might be made good labourers, and remain in the villages.

It is only by practice that they can be taught to milk the cow or to hold the plough, and go with the implements that are used on a farm. These are the things, a practical acquaintance with which will make them more valuable, and able to earn better wages. Every farmer in this room will bear me out that there are plenty of men roaming about the country to get a day's work who don't know how to use a tool that is put into their hands. There is, in fact, a great scarcity of men who know how to use them.

To give you a case in point: In our village a lad who has been to school till he is fourteen, and now is fifteen, wants to get on the land. He has tried every farmer in the neighbourhood, but he is such an awkward duffer that they won't have

him. On the other hand, a lad between eleven and twelve, who has been on the land during his holidays and on Saturday afternoons, comes to help us mind the horses, and he is always ready to do any little job. I can teach him, and he will do what I tell him, and is very handy. That is a case in point, but it is by no means a singular one. I have found it the case all round. Also the wages these lads would earn would pay for some of the meals our philanthropic educationists are thinking of giving them free, or out of the rates, which is the same thing.

Another matter which presses upon labourers heavily is the rates, which take the place of rent. It is a common thing, as you know, for a man to have seven, eight or nine children at home, and the eldest not old enough to go to work, and the father only earning 15s. a week. What a help it would be in these cases if the eldest boy could go to work a little earlier and earn his 5s. or 6s. a week. He could do this during the day, and go to an evening school at night.

Again, it causes parents often to shift from the country, or change from one place to another, simply to evade the law. Many men shift at Michaelmas and go to another district because they have got a boy twelve or thirteen, and they rig him up in an older boy's clothes, say he is fourteen, and send him to work on the land. He is palmed off as being fourteen because they do not know him in a new neighbourhood. An instance of this came under my notice. A widow from a neighbouring county, who had a large family, came to see me and wanted her boy taken on the farm. I asked her how old the boy was, and she said fourteen. I remarked that he was rather small for his age, but I took

him on, and, strangely enough, I had had him two years when, by accident, it came out that he was only fourteen then. She was compelled to do this as a matter of livelihood. She did it, and did it very well; and I employed the lad for two years before his real age leaked out. I had another case last Michaelmas in which I was called upon to use a good deal of diplomacy. A carter wanted to leave my service, but his wife did not. I could not make out the reason, so I looked into the matter myself, and it came out at the finish that the father did not want the lad to go to school as he was big enough to go to work, but he was made to go against his will, and the father knew if he went away into some village where he was not known the boy would not have to go to school any longer.

The lad is now as tall as his father, and is working for me at 6s. a week. It was owing to not being able to get boys to drive the plough, as well as the price of wheat going down to 9s. per sack, that caused the heavy and good wheat-growing land of this country to go out of cultivation, and thereby did away with much valuable labour in the villages, and men were obliged to go into the towns for work. That sort of land cannot always be ploughed with a pair of horses, and men do not like being put at boy's work; besides, two men with one team (which I have often seen for days together) makes the work more expensive. Last spring, after the rain, I saw ten men with five teams of horses at plough on the land. I think that rather a disgrace that men had to be paid for work which boys ought to have done better, if they could have been found.

It is a great advantage to a man in after life if he has

worked on a farm in his youth. If he goes to a town or a factory, and his health fails him, he can much more readily take up his old employment on the land, as an employer would prefer taking such a one.

Some men are afraid to go into the stables to put a bridle on a horse for fear the animal will tread upon his toes, or something of that sort. If we are going to do anything with the lads to make the work on a farm a bit popular for them, you must not put too much of this science and grammar into their brain. Let them be taught to observe the things that are around them, and to cultivate an inherent love of horses, sheep and other animals with which they will have to do in their daily work on the farm.

I am certain I should never have been a farmer if I had not been put to it in my early days, and I should not have made my boy one if I could have avoided it; but he got such a liking for it from his boyhood's days that he said he would do nothing else. And I believe that a good many labourers' sons are exactly the same. Somebody has said that the labourers are so ignorant, but I do not agree with that statement. I think some shepherds, carters and stockmen are a credit to any State. I once heard a thoroughly good shepherd say, "Talk about tradesmen; a man who "can manage a flock of sheep as I do is equal to any trades-"man." And so he was.

There can be no doubt about the boys being better physically (and morally, I venture to think) from being on the land and in the open air as much as possible. I had a lad—the oldest of a large and poor family—whom the parents

kept regularly at school, so as to get him out to work early. They sent him into the town to do light work, but he soon became ill, and the doctor said he would go into a decline unless they sent him into a sanatorium. I was sorry for him, and we sent him into a sanatorium. He came back much better, but he returned into town. Very soon, however, he got as bad as ever. The father said it was a bad job, and asked me to try him on the land. I did so, and he came and drove for one of my carters. He came in the summer, and got stronger and stronger, and I ventured to think he could keep out all the winter unless it was wet, when he was sent into the dry. He did not stop away at all, but got quite strong and well; and only last year he left us as a grown-up lad to be third carter, and big enough and able to be second carter. Had he remained in the town he would have died. We all know what fine men the lads make who work on the land. They are the backbone of an army. On the other hand, look at the recruits from the towns for the Militia. Insignificant little fellows they are. And why? Simply because they have been brought up in the town instead of the villages. Unless you can devise some means by which young men shall go on the farm early in life, they won't take to it after.

With regard to the subject of lecturers, I quite believe in their going round. We had a most excellent man come round lecturing of an evening in our district, and what he said was of very much use in teaching the boys to take an interest in agriculture and in the garden. He certainly did good, but, as I have before said, the important thing is that we must try and have the lads on the land earlier, and let them continue their education at the evening school. They

would be better there than prowling about the streets, and often there is not room or attractions for them at home with the little ones. Some say the lads would be too tired and dull to study of an evening, but I don't think you will find it so. Being out in the open air all day, I believe the boys would take to their studies with greater zest, and we must remember that in the winter months work on the land or in the stables is over at sunset, long before the evening school would begin.

Mr. M. W. COLCHESTER-WEMYSS (Chairman of the Gloucestershire Education Committee) said: I believe that the vote of thanks which I have been asked to submit to you, ladies and gentlemen, comes a little prematurely, because, unfortunately, Lord Onslow has to leave to catch a train. Therefore, I hope it will not be understood because this vote of thanks is now being put, that it necessarily means the conclusion of the Conference.

I have been asked to propose that we should pass a very hearty vote of thanks to Lord Onslow for so kindly coming to Gloucester to-day. We welcome his lordship here very heartily, not only because of the distinction which his great name and personality will bestow upon the Conference, and not only because the fact of his being here may be taken to imply that we have official patronage and countenance, but, I think, very largely also, perhaps principally, because it has enabled some of us at least to see and judge for our own selves that the head of the Agricultural Department in England is a man who is evidently most earnestly desirous of mastering these subjects which are entrusted to the care of his Department, and most keenly desirous of

solving some of those very difficult problems which are at the present time facing agriculture and agricultural education.

I am sure that, for that reason alone, it is very much to be desired that we should return a very hearty vote of thanks to Lord Onslow, and express our gratitude to him for giving us this opportunity of doing so.

I am also asked to join with this vote of thanks—and I have very much pleasure in complying with the request—the names of those who by their papers and their speeches have so largely contributed to the success of this Conference. I am afraid we have received such a very rich feast of intellectual entertainment to-day that it has been impossible to assimilate it properly, and that we hardly yet appreciate the full measure of the treat which we have enjoyed. But I hope that everybody who has attended the Conference, and a great many of those who have not, will study and devote several hours of their leisure to a careful perusal of the official report of the proceedings which will very shortly be published.

May I just say one more word ? I desire, on behalf of the Education Committee of Gloucestershire to tender our very hearty thanks to those members of Committees of neighbouring counties who have so courteously accepted the invitation which we extended to them, and who have so kindly attended here to-day.

Mr. Chairman, I beg to move a very hearty vote of thanks to Lord Onslow for attending here to-day.

MR. B. ST. JOHN ACKERS (the High Sheriff of Gloucestershire) said: It gives me very great pleasure to second this hearty vote of thanks to the Minister of Agriculture (the Earl of Onslow) and to the other speakers. I should be somewhat inclined myself to pick out one or two, or perhaps three, of those who have spoken to-day as being especially grateful to them for what they have said, but I take it, sir, that it is not intended, with the exception of one name, to specify any particular person.

We each may have our particular friends, we each may desire that the words which have been spoken by certain persons should be most remembered; and, therefore, we cast the whole expression of thanks in one general resolution.

May I be allowed to say just one word with regard to the almost paternal feeling that I have for the Earl of Onslow? For many long, weary years the Central and Associated Chambers of Agriculture (of which I am now the oldest business member) determined that the greatest of English industries should be represented by a Department of its own, and that it should be presided over by a Minister of Cabinet rank. Those were things which we set ourselves to do, and we were very many years in doing them. But I am happy to say we have eventually succeeded, and, thanks to the late Lord Salisbury, who granted what we asked, we have not only a Department of State, and not only Ministers but Ministers of Cabinet rank, and Ministers, I venture to say, who will compare most favourably with the Ministers of any other Department in the State.

It is a very happy thing, sir, I think, that agriculture, at any rate, has such a good head; but I think Lord Onslow

will acknowledge that with the very best head and the very best staffed Department—and may I say here for one moment how much we regret the absence of Sir Thomas Elliott, who, through illness, is not here to-day, and to whom all agriculturists owe a great debt of gratitude, for he is always accessible, and he has done so much for the cause of agriculture ?—I say that, with the best head and the best Department, you must have a strong backing up in the country in order to carry out what we want. And I say in the hearing of Lord Onslow, who, I am sure, has earned the gratitude of everyone in Gloucestershire for coming here to-day, and gracing this meeting with his presence and saying what he has, that we are not satisfied that the Board of Agriculture is receiving the assistance that it ought to receive from the State.

We are not satisfied with the " beggarly " £10,000 a year. We consider that it ought to be certainly £100,000, especially when we look across the Channel and hear of something like half a million being granted. I can only say that Lord Onslow will gain our gratitude and that of the whole agricultural community if in his term of office—which, I trust, will not be so short as not to be able to succeed upon this point—that before he gives up that office, if he should ever be called (as he will very likely be) to a higher one, he will have the satisfaction of feeling that, at any rate, something more adequate in the way of Government grant has been given to his Department for the purpose of agricultural education.

The EARL OF ONSLOW : I feel deeply gratified for the manner in which you have been pleased to receive this resolution. I think that a great deal of the success of the Conference is due to those who promoted it, particularly to

Mr. Medd. Mr. Medd has for long been an enthusiast in agricultural education, and he has seized a most opportune moment for convening this important Conference. The papers we have heard read to-day have produced a deep impression on my mind—and I think I might say on the mind of Mr. Morant—and we shall go away from here with a better idea of what can be done in a practical way to carry out your wishes. And I venture with some confidence to prophesy that results of no mean order will follow the meeting of this important Conference. Not less was I glad to hear the remarks of Mr. White as a tenant farmer, because it is very easy for those who are enthusiasts in the cause of education to ride their hobby—I was going to say almost to death—and it does us good sometimes to look at the other side of the medal, and hear from those who are practically engaged in agriculture what they think of it as a paying concern. I would, however, throw out this suggestion to Mr. White. I don't know what the practice is in that part of the country where he lives, but under what is known as the Robson Act it is quite possible for lads to be taken out of school of at an age considerably less than fourteen years for the purpose of taking part in agricultural pursuits, provided they make 250 attendances at school, which can easily be done during the winter months. I think the solution of many of the difficulties he has pointed out might lie in that direction. In conclusion, let me thank you most heartily for giving me an opportunity of hearing the papers read to-day, and I rejoice to think they will be amplified in book-form, and we shall be able to study them at our leisure.

Mr. CHARLES G. WATKINS (Education Secretary, Bucks): Mr. Chairman, our distinguished President of the

Board of Agriculture has urged the desirability of local education authorities taking advantage of what is known as the "Robson Act," and he would probably like to see thousands of our children leaving school under the provisions of that Act at the age of eleven. (Hear, hear.) I hear "Hear, hear" from various parts of the room, which shows that the principle is generally approved. I simply wish to point out the probable financial effect which this would have on our local educational authorities. It seems to be overlooked that children who receive exemption under this Act may cause a county to lose a considerable amount of Government grant. Only grants as "half-timers" are given to children who are withdrawn. Now, it must be perfectly obvious to everyone present that the school staff must be retained. You cannot reduce the staff because a few children are away for several months, and you cannot reduce the size of the room. The same accommodation must be kept up, and therefore, if exemption becomes at all popular, and children leave in large numbers, it must result in a loss in Government grant, which will be made up out of the local rates. This is a point which I think ought to be taken into consideration. I should like to submit another point also. The "Robson Act" was passed in 1899, and partial exemption only deals with children betewen the ages of eleven and thirteen; and it may not be generally known what may be the consequences to children at the age of thirteen. They cannot leave school for whole-time exemption unless they have passed the legal standard of exemption, or are able to take advantage of the "Dunce's Clause." This is the term commonly given to one of the optional clauses of the Model Bye-Laws by which a child may receive total exemption at the age of thirteen years, provided it has

made 350 attendances in not more than two schools in each year for any five years, whether consecutive or not. It may, of course, be possible to take advantage of the "Dunce's Clause" at the age of thirteen, or it may be that the child can pass the local labour examination; but considering a child is only at school about half-time under the Robson Act, there is not much chance of his passing the labour examination at the age of thirteen. Another point I should like to submit is how far we are justified in taking any little child of eleven, without medical examination as to physical fitness, and putting it to agricultural employment. On physical grounds, it will not always be desirable to put a child to work on a farm for the similar reason by which a child of the same age is not allowed to go into a factory.

MR. H. GOLDINGHAM (Wotton-under-Edge): There are two points to which I should like to call the attention of this meeting. The first is with regard to the young agricultural labourer and the reasons which lead him to desert the farm. It seems to me that previous speakers have omitted all mention of a very potent one, and that is the lack of a Saturday half-holiday. Now, I live in a district where there are large breweries and large quarries, in addition to mills and the ubiquitous railway, in all of which businesses the week-end half-holiday is the rule. It is not, therefore, to be wondered at that a young man should naturally prefer an occupation in which he gets as good, or perhaps better, wages than the farmer gives, with the addition of the much-prized half-holiday. Further, as Sir John Dorington reminds me, in these industries there is no Sunday work, or, if there is, it is paid for as overtime. Of course, we all know that cows must be milked and horses and cattle be fed on

Sundays as well as on week-days, so that this is a question to which farmers and others interested in the future of agriculture must address themselves if they would keep the best class of labourer on the land. It occurs to me that a possible way out of the difficulty may lie in some scheme of co-operation between neighbouring farmers by which the services of competent men might be shared, so as to form a system of "reliefs" for Saturday and Sunday duty; but whether this suggestion commends itself to practical agriculturists or not, it is clear that a remedy for the present state of things must be sought.

The other point to which I should like to direct attention has reference to example or experimental plots of land in each village. We have heard a good deal from previous speakers of the necessity for these experimental plots, and of the great benefit which has accrued where they have been established. Now, I think I may venture to say that in nearly every village throughout the length and breadth of the land there is already a plot of land which, if it is not an experimental plot, certainly ought to be one, and which should afford an example to the whole parish. I allude to the glebe.

If we look back to the times of our grandfathers we see that the right sort of country parson set an example to the parish, not only by leading a godly life, but by feeding a good beast, keeping a good horse, doing his land well, and showing how fruit and vegetables should be grown. Some of the present-day clergy are not behind-hand in this respect, and all honour to them say I, but I fear the greater number will be found wanting, for they do not attempt to farm the

glebe, or if they do they farm it lamentably. They know little, and appear to care less, about the great industry which from year's end to year's end must necessarily engross the thoughts of most of their parishioners. Speaking with every respect, I cannot but think that herein they make a great mistake, for I am convinced that if our country clergy were more suitably educated for the position in life they are called on to occupy, if we saw fewer long black coats and more tweeds and homespuns, if the parson could enter intelligently into the agricultural aims and needs of his flock, and if, instead of letting off his glebe, or leaving it practically derelict, he would work it himself and make it an "example plot" to the whole parish, and especially to the children attending the village school, it would be greatly to his own advantage, and would provide the much-needed starting-point or nucleus for agricultural education of the right sort throughout the country.

Mr. JAMES T. HOBBS (Maiseyhampton): As a tenant farmer I should like to back up what Mr. White has so ably laid before this meeting. I think that we tenant farmers ought to be very grateful to Mr. Bathurst and Mr. Medd for initiating and so well carrying out this Conference. I assure you that one of the farmers' greatest grievances is the shortness of boys to work on the land. Naturally, the last thing that farmers would wish to do would be anything to the detriment of the budding agricultural labourer. Some people have an idea that if a boy remains at school until he is fourteen years of age he is more suitable to be kept on the land and become an assistant to the farmer than if he left school at an earlier age. My idea, however, is that he is not. If you keep a boy at school after he is twelve years of age, as

a rule he gets ideas into his head which tend to make him rather above agricultural work. Unfortunately, in many cases the lads of the present age think that work on the land is a degrading occupation. I feel myself as a farmer that it is one of the most honoured occupations which one can possibly take up, and I do not see why the agricultural labourer should not look at it in the same light. Those who are inclined to think that it is a degradation to be engaged in agriculture should be reminded of the many eminent people in this country, from His Majesty the King downwards, who take a practical interest in agricultural pursuits.

Mr. T. E. WILLIAMS: It seems to me that there are one or two points which have not been touched upon to-day. We have had a mass of information brought before us and a great many useful ideas, and these thoughts have rather come into my head from the emphasis laid by one of the speakers on the advantage and necessity of accurate observation.

I was very glad to hear Lord Onslow point out the possibility of making greater use of the Robson Act, and I feel certain that it would be for the great benefit of the country if more advantage were taken of that Act.

If there are the financial difficulties that one speaker has (and rightly so) referred to, doubtless those could be overcome in some way by those who have the management of these matters. But in looking around at other countries —our rivals in agriculture, and who are more successful in its undertaking than we are—I find that children learn to work on the land far younger than they do in England. Not long ago, when I was passing over the Rockies about

six o'clock in the morning, I saw a little child, about six years of age, knocked over by a calf while the child was milking the cow. Probably that taught the child better how to manage the cow and the calf. The mother was working inside the shanty, and she called out to the child some directions which I did not hear, but the result of which was that the child drove the calf away, took the milking stool, and sat down and finished the milking. I think you will agree that that child learnt its work early in life—work likely to be useful to it, and calculated to make it a useful member of society.

During my travels I visited a farm some fourteen miles from a small town—a little village it might be called—and was talking for a few minutes to the man who lived there. I said, " You have a lot of children here ; how do you manage to get them taught anything ? " He replied, " There is not " much to do here in the winter, so we go into the town " during that time." So you see, here was a settler, living fourteen miles from the nearest town, and when the country was snowed up he removed into the town and had his children taught. In most European countries I have been in—certainly in Norway, Sweden, Italy and Switzerland—the children take to work early, but their education is not neglected, nor the knowledge to be derived from books. I lay great importance on practical education, because I think that school is the place where children ought to be taught to observe accurately. Then when they go to work they will be able to make use of their observations.

I have found myself as a farmer great difficulty in getting boys to work when they leave school. If you give a boy a

horse to lead, and it shies or a fly tickles it, the lad is frightened and drops the reins; the horse runs away, and perhaps a worse accident happens. Or, for the sake of example, you set a boy to work with a hoe. He complains that his back aches and his hands are sore. Why? Because he has not been accustomed to work. Again, you take a girl into the kitchen and try to make a kitchenmaid of her; but she has no idea of domestic duties unless begun early in life.

As I have before remarked, there is no necessity to neglect the child's education. Evening schools may be provided. If there is one class of schools more than another that I favour in a country district it is the continuation school, and I should like to see some scheme devised by which continuation schools could be stimulated by scholarships. There never used to be any serious difficulty with a boy of more than the average mental ability getting on in life. If he was of higher intellectuality when he left school he could get a sizarship or scholarship, and went to the University, and perhaps became a Bishop or Member of Parliament before he finished his career. I think by more substantial scholarships, and fewer of them, we should get far better results. You cannot expect everyone to be of the same grade, but we want everyone to be useful, and to work for the benefit of his own country.

I was very much struck when, about three years ago, I visited Japan with the intense patriotic ambition of every Japanese, from the Minister of State down to the workman on the roadside; and I very much admired the independent spirit and great perseverance in which they were determined

to accomplish the duty which they had set before them in life. In all that they did they seemed animated with an idea for the aggrandisement, not of themselves, but of their country, and I think we might take a lesson from them in this respect, that, while they boast of a longer civilisation than the Western countries, they are doing their utmost to learn all they can from the West.

Mr. W. S. LANE (Upton-on-Severn): As a Worcestershire tenant farmer, and as in some sense the representative of Worcestershire tenant farmers here to-day, I should like to say a word upon one or two of the points which have been raised. We have heard very much about the Robson Act and about half-timers. I am quite aware that I am not in entire agreement with all my fellow-farmers on this question, but I do think that, on the whole, half-timers are a mistake. I think it would be very much better if, instead of that, boys could be taken from school in rural districts at the age of twelve years, provided they had made 350 attendances, or passed the fifth standard, and put to work. At that age they would take to it much more naturally than if they kept at school until they are fourteen, when they seem to lose all aptitude for manual labour, and will not make the sort of labourers we require. I would have no objection for such boys to be compelled to attend evening continuation schools for three years after that. It has been said by some of the speakers—and by one in particular, whom I followed and agreed with in everything else—that a boy would be too sleepy to learn anything at an evening continuation school after he had done his day's work. I can only say if such a state of things happened, I think the fault would be either very much with the teacher or with the system of education

given. Evening continuation schools should not attempt to give instruction in which there would be any of the drudgery which you get in the day elementary schools. The instruction, I think, should be interesting of its kind and useful, and much of it practical, such as has to be performed on the farm or at the work bench. I should like also to see arrangements made so that the boys—the older ones, at least, if not the whole school—could take a longer summer holiday during the busy season, when they could be profitably and usefully employed, earning wages and obtaining practical instruction of the best kind. I may say that in Worcestershire we are attempting something in the way of improving the instruction in our rural schools from a rural point of view; and I was heartily glad to hear Mr. Morant tell us what opportunities we have (as I have already gathered from that admirable preamble to this year's Education Code) of making the necessary changes ourselves. I think several speakers have touched the right nail on the head when they said that if a boy is kept at school until he is fourteen years of age, and has not been taught to do any kind of work with his hands until that time, there will be very great difficulty in ever making a useful farm labourer of him. I quite agree it is impossible to teach a boy to be a farm labourer or to be a farmer at an elementary school, but at least you can prepare him to learn how to become one when he leaves.

VOTES OF THANKS TO THE CHAIRMAN.

MR. MORANT: I have been asked to propose a vote of thanks, without which the Conference would be incomplete. Two things are essential to the success of a Conference like

this : first, energetic secretaries, who know how to set about the business, and these you have in Mr. Medd and Mr. Charles Bathurst, and we all recognise and appreciate their efforts and the success which has attended them. The second essential is a Chairman. Speaking in Gloucestershire, there is no necessity for me to describe Sir John Dorington, or to dwell upon his many qualities. But in London we know him in a different aspect. Certainly, in the House of Commons there is no man more respected or looked up to as the best representative of the English country gentleman who serves his country in many different ways. His firmness and tact are well known in the House of Commons, as they are no doubt equally well known down here. A great deal of the success of the Conference is no doubt due to the fact that we have as Chairman not an educationist as such, but a man who is a practical farmer and a country gentleman, and who looks at the subject from many different points of view—as a legislator and an administrator, and as one who lives in and knows the country, and is familiar with the needs of the farmer, the tenant farmer and the labourer. This subject of agricultural education has been left very much too long in the hands of people called educationists, but, from my own knowledge of the question, we want the ideas of practical men brought to bear upon it, not instead of but as well as those of the educationists. I represent the educationist side of the problem, and we do feel that we need the practical knowledge of those who have spoken to-day, and the fact of having such a man as Sir John Dorington as Chairman of the Conference shows that we are going to get at the heart of the matter, and that the combination that is needed is going to be brought to bear upon it. I am sure you will give a hearty vote of thanks to him for

his admirable conduct in the chair and taking such a big part in bringing the movement forward.

PROFESSOR T. H. MIDDLETON (Cambridge University): I have much pleasure in seconding the vote of thanks which has been proposed to Sir John Dorington. Those of us who have listened to the discussion which has taken place on the education of the labourer and the small farmer have, I think, made up our minds what the problem really is. We are pretty well agreed that he must learn to read, write, count, to see and to think; but how? What is the best method? By what method shall we the best accomplish our ends? By what method shall we ensure that he gets that education which he requires? I think it is quite clear that there is no one best method. We have an Education Code, but that must be applied in each locality according to the necessities and requirements of the locality; and nothing is more clear than that the success of the education, more especially of the labourer and small farmer, will largely depend upon the efforts of men like Sir John Dorington and others who have taken up this educational work in our counties. We therefore owe to them very hearty thanks, and I have great pleasure in seconding this vote, mentioning Sir John Dorington and all those who take a special interest in education in the County of Gloucester and the neighbouring counties.

SIR JOHN DORINGTON, BART., M.P.: I am much obliged for the appreciative way in which this vote has been received. When Mr. Medd proposed to me in the summer that I should take the chair I agreed very cordially, but I did not anticipate we should have had quite such a success as has attended this Conference to-day. This meeting is not

merely a Gloucestershire meeting, and I think, from the persons gathered here from all parts of the country, that immense attention will be given to it. It is likely to have considerable effect upon the public opinion of the country. We have had the subject of agricultural education brought before us to-day in a consolidated form, and see exactly where the truth lies. It is borne in upon me that apparently one of the greatest difficulties of the present time is what Lord Onslow pointed out, namely, that our schools are of too literary a character. That, of course, is due to the training of the teachers, and that has been the subject of some of the best papers to-day. Teachers who have no idea that it is their business to bring up children to take an interest in the pursuits by which they will gain their living, but have brought them up in accordance with the view that has prevailed that a literary education is the best education, cannot be expected suddenly to turn round and do something else. About two years ago, when the Nature Study Exhibition was held in London, I took some teachers to see it, and several other gentlemen did the same. It was a new idea to them, and they were amazed at what they saw; but to-day it is presented as a common-place thing to be taken up in our schools. But teachers don't understand it is their duty, and they won't, naturally, until you gradually train, I was almost going to say, a new class of teacher. In my opinion, Nature training is the best method of developing the intelligence and observation of children. You don't want them to learn things simply by heart without the slightest conception of what they mean. I might give an illustration reported to me of what happened to a school party who went down to Weston-super-Mare. When the children arrived the tide was up, and the wavelets were

rippling on the beach. After amusing themselves for awhile, the party went into dinner, and when they came out no water was visible. What had become of it ? asked some of the children. The schoolmaster said it was the tide. The children said they knew all about the tides, but where did the water go ? That is an illustration of the difference between theory and practice—effect and cause. The tides, they said, they understood perfectly, but where the water had gone was totally beyond their comprehension. That was the difference between knowing a fact and knowing the reason why. What we want is to give the children an education that shall enlarge their intelligence, and make that intelligence fit the pursuits they are likely to be engaged in in after-life. Mr. T. E. Williams, in his remarks, spoke of his travels in certain countries where the children work in summer and go to school in the winter. But in districts where that prevails the seasons are regular ; in the winter the land is frost-bound, and that is practically about the only thing for the children to do. But in England we have an irregular sort of climate, and as a rule we can carry on work all through the year. That is not the case in America and Canada ; work on the land is all stopped. Let me tell you another little story, if I may. I was in Norway, and got into conversation with a native farmer, who could speak excellent English. He said he had never been to England, and I asked him where he had learnt the language, and he replied, " In the winter, when I had nothing to do." He added : " I learnt all your National poetry, ' Hi-diddle-diddle, de cat and de fiddle,' ' Jack and Jill went up de hill.' " It was an amusing illustration of the sort of thing he called our National poetry, although, after all, I think these ballads are National. But the anecdote illustrates the way in

which a person may get a very considerable amount of knowledge by going to school in winter and working in the summer. I only hope what has been done to-day may attract some attention and produce some good. Mr. Morant is here, and has had some of the defects of our present educational system pointed out to him. Mr. Morant said it is not the fault of the Code, and if only we read it properly, we have all the power to overcome these defects. But that is the difficulty. We do not always know what power we possess, and perhaps we have hitherto obeyed the instructions laid down by the Education Department too literally. We have the utmost respect for the Education Department, but in future I shall be inclined to ask Mr. Wemyss and Mr. Hyett to interpret the Code a little more liberally, without reference to every dot and comma in it, and if Mr. Morant makes any objection I shall quote his own words to-day.

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